MNWAPGR

Wireless 802.11g Access Point / Router

User Manual

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This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against radio interference in a commercial environment. This equipment can generate, use and radiate radio frequency energy and, if not installed and used in accordance with the instructions in this manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures are necessary to correct the interference.

CE Declaration of Conformity

This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022/A1 Class B.

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Chapter 1 Introduction

Congratulations on your purchase of this outstanding Wireless Broadband Router. This product is specifically designed for Small Office and Home Office needs. It provides a complete SOHO solution for Internet surfing and is easy to configure and operate even for non-technical users. Instructions for installing and configuring this product can be found in this manual. Before you install and use this product, please read this manual carefully to fully explore the functions of this product.

Functions and Features

Router Basic functions

- **Auto-sensing Ethernet Switch**
  Equipped with a 4-port auto-sensing Ethernet switch.
- **WAN type supported**
  The router supports these WAN types, Static, Dynamic, PPPoE , PPTP , and Dynamic IP with Road Runner.
- **Firewall**
  All unwanted packets from outside intruders are blocked to protect your Intranet.
- **DHCP server supported**
  All of the networked computers can retrieve TCP/IP settings automatically from this product.
- **Web-based configuring**
  Configurable through any networked computer's web browser using Netscape or Internet Explorer.
- **Virtual Server supported**
  Enable you to expose WWW, FTP and other services on your LAN to be accessible by Internet users.
- **User-Definable Application Sensing Tunnel**
  User can define the attributes to support the special applications requiring multiple connections, like Internet gaming, video conferencing, Internet telephony and so on, then this product can sense the application type and open a multi-port tunnel for it.
- **DMZ Host supported**
  Allows a networked computer be fully exposed to the Internet; this function is used when the application sensing tunnel feature is insufficient to allow an application to function correctly.
- **WAN Statistics Supported**
  Enables you to monitor inbound and outbound packets

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Wireless functions

- **High speeds for wireless LAN connection**
  Up to 54Mbps data rate by incorporating Orthogonal Frequency Division Multiplexing (OFDM).
- **Roaming Support**
  Provides seamless roaming within the IEEE 802.11b (11M) and IEEE 802.11g (54M) WLAN infrastructure.
- **IEEE 802.11b compatible (11M)**
  Allowing inter-operation between multiple vendors.
- **IEEE 802.11g compatible (54M)**
  Allowing inter-operation between multiple vendors.
- **Auto fallback**
  - 54M, 48M, 36M, 24M, 18M, 12M, 6M data rate with auto fallback in 802.11g mode.
  - 11M, 5.5M, 2M, 1M data rate with auto fallback in 802.11b mode.

Security functions

- **Packet filtering**
  The Packet Filter allows you to control access to a network by analyzing the incoming and outgoing packets, and letting them pass or halting them based on the IP address of the source and destination.
- **Domain Filtering**
  Let you prevent users using this device from accessing specific URLs.
- **URL Blocking**
  URL Blocking can block hundreds of websites connection by simply a **keyword**.
- **VPN Pass-through**
  The router also supports VPN pass-through.
- **WPA, WPA-PSK and 802.1X support**
  With the WPA, WPA-PSK and 802.1X functions is enabled, the wireless user must authenticate to the router first before using the Network service.
- **SPI Mode Support**
  When the SPI Mode is enabled; the router will check every incoming packet to detect if it is valid in relation to all current open connections.
- **DoS Attack Detection**
  When this feature is enabled, the router will detect and log the all DOS attacks coming from the Internet

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Advanced functions

- **System time**
  Allow you to synchronize the routers system time with a network time server.
- **E-mail Alerts**
  The router can send its security information to you via an email alert.
- **Dynamic DNS Support**
  The router can contact popular Dynamic DNS providers to update your dynamic DNS entry automatically At present,the router supports dyndns.org, tzo.com and dhs.org.
- **SNMP Support**
  The router supports basic SNMP functions to allow external monitoring.
- **Static Routing Table**
  The router supports the manual addition of Static Routes
- **Scheduled Rule Support**
  Customers can control some functions, like virtual server and packet filters based off a specific timing configuration

Other functions

- **uPnP (Universal Plug and Play) Support**
  The router supports the uPnP protocol for dynamic configuration by applications such as the Microsoft X-box and Msn Messenger.

Packing List

- Wireless broadband router unit
- Installation CD-ROM
- Power adapter
- CAT-5 UTP Fast Ethernet cable

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Chapter 2 Hardware Installation

2.1 Panel Layout

2.1.1. Front Panel

Figure 2-1 Front Panel

LED:

LED	Function	Color	Status	Description
POWER	Power indicator	Green	On	Power is being applied to this product.
M1	System status indicators	Green	Blinking	Flashed once per second to indicate system is alive.
WAN	WAN port activity	Green	On	The WAN port is linked.
			Blinking	The WAN port is sending or receiving data.
Wireless	Wireless activity	Green	Blinking	Sending or receiving data via wireless
Link/Act. 1~4	Link status	Green	On	An active station is connected to the corresponding LAN port.
			Blinking	The corresponding LAN port is sending or receiving data.
10/100	Data Rate	Green	On	Data is transmitting in 100Mbps on the corresponding LAN port.

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2.1.2. Rear Panel

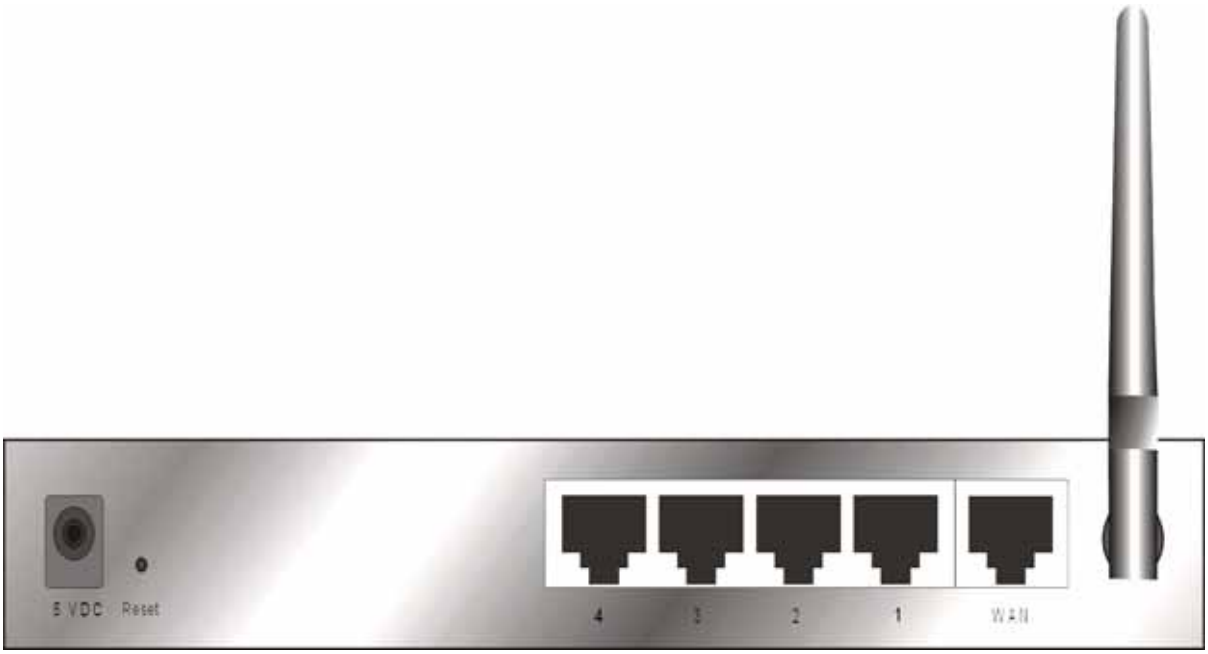

Figure 2-2 Rear Panel

Ports:

Port	Description
PWR	Power inlet
WAN	The port where you will connect your cable (or DSL) modem or Ethernet router.
Port 1-4	The ports where you will connect networked computers and other devices.
Reset	The button to reset the units settings to factory defaults

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2.2 Procedure for Hardware Installation

2. Decide where to place your Wireless Broadband Router

You can place your Wireless Broadband Router on a desk or other flat surface, or you can mount it on a wall. For optimal performance, place your Wireless Broadband Router in the center of your office (or your home) in a location that is away from any potential source of interference, such as a metal wall or microwave oven. This location must be close to both power and network connections.

2. Setup LAN connection

a. Wired LAN connection: connects an Ethernet cable from your computer's Ethernet port to one of the LAN ports of this product.

b. Wireless LAN connection: locate this product at a proper position to gain the best transmit performance.

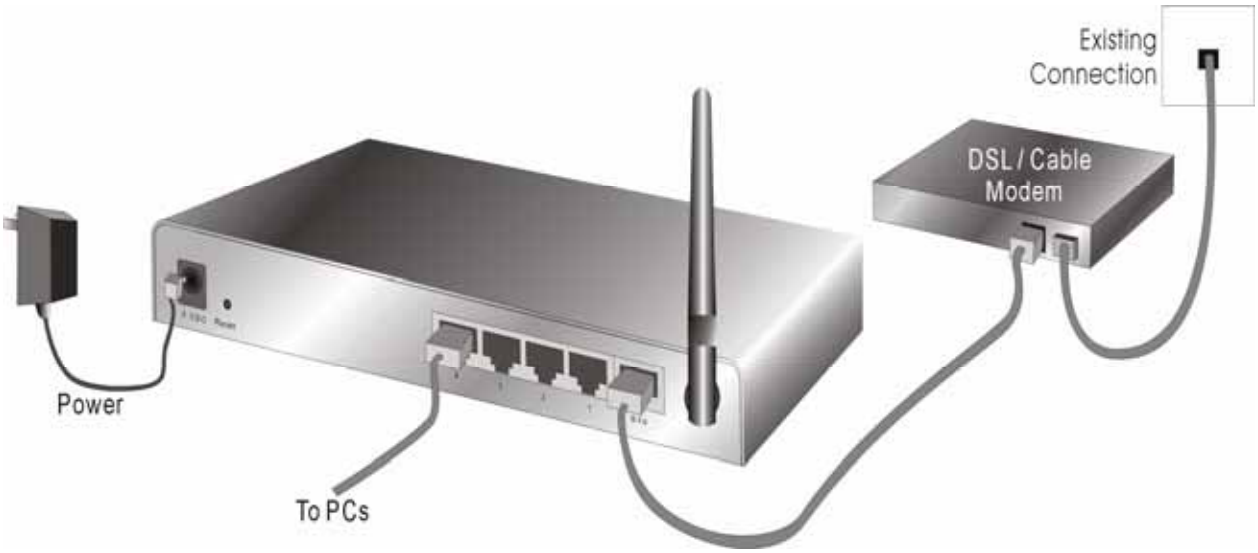

Figure 2-3 Setup of LAN and WAN connections for this product.

3. Setup WAN connection

Prepare an Ethernet cable for connecting this product to your cable/xDSL modem or Ethernet backbone. Figure 2-3 illustrates the WAN connection.

4. Power on

By connecting the power cord to the power inlet and turning the power switch on, this product will automatically enter the self-test phase. When it is in the self-test phase, the indicator M1 will be lit ON for about 10 seconds, and then M1 will be flashed 3 times to indicate that the self-test operation has finished. Finally, the M1 indicator will be continuously flashed once per second to indicate that this product is in normal operation.

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Chapter 3 Network Settings and Software Installation

To use this product correctly, you have to properly configure the network settings of your computers and install the attached setup program onto your MS Windows platform (Windows 95/98/NT/2000/XP).

3.1 Configuration of the Network Settings of Your Computer

The default IP address of this product is 192.168.123.254, and the default subnet mask is 255.255.255.0. These addresses can be changed if required, but the default values are used in this manual. If the TCP/IP environment of your computer has not yet been configured, you can refer to **Appendix A** for information on how to configure it. For example,

1. configure your computer's IP as 192.168.123.1, subnet mask as 255.255.255.0 and gateway as 192.168.123.254, or more easier,
2. configure your computer to load TCP/IP setting automatically, that is, via the DHCP server of this product.

After installing the TCP/IP communication protocol, you can use the **ping** command to check if your computer has successfully connected to this product. The following example shows the ping procedure for the Windows platform. First open up a Command prompt (cmd in 2000/XP, msdos in 95,98x). Second, execute the **ping** command

ping 192.168.123.254

If the following messages appear:

Pinging 192.168.123.254 with 32 bytes of data:

Reply from 192.168.123.254: bytes=32 time=2ms TTL=64

Then a communication link between your computer and this product has been successfully established. Otherwise, if you get the following messages,

Pinging 192.168.123.254 with 32 bytes of data:

Request timed out.

There must be something wrong in your installation procedure. You have to check the following items in sequence:

1. Is the Ethernet cable correctly connected between this product and your computer?
   Tip: The LAN LED of this product and the link LED of the network card on your computer must both be lit.
2. Is the TCP/IP environment of your computers properly configured?
   Tip: If the IP address of this product is 192.168.123.254, the IP address of your computer must be 192.168.123.X and default gateway must be 192.168.123.254 where the X is any number between 1 and 253.

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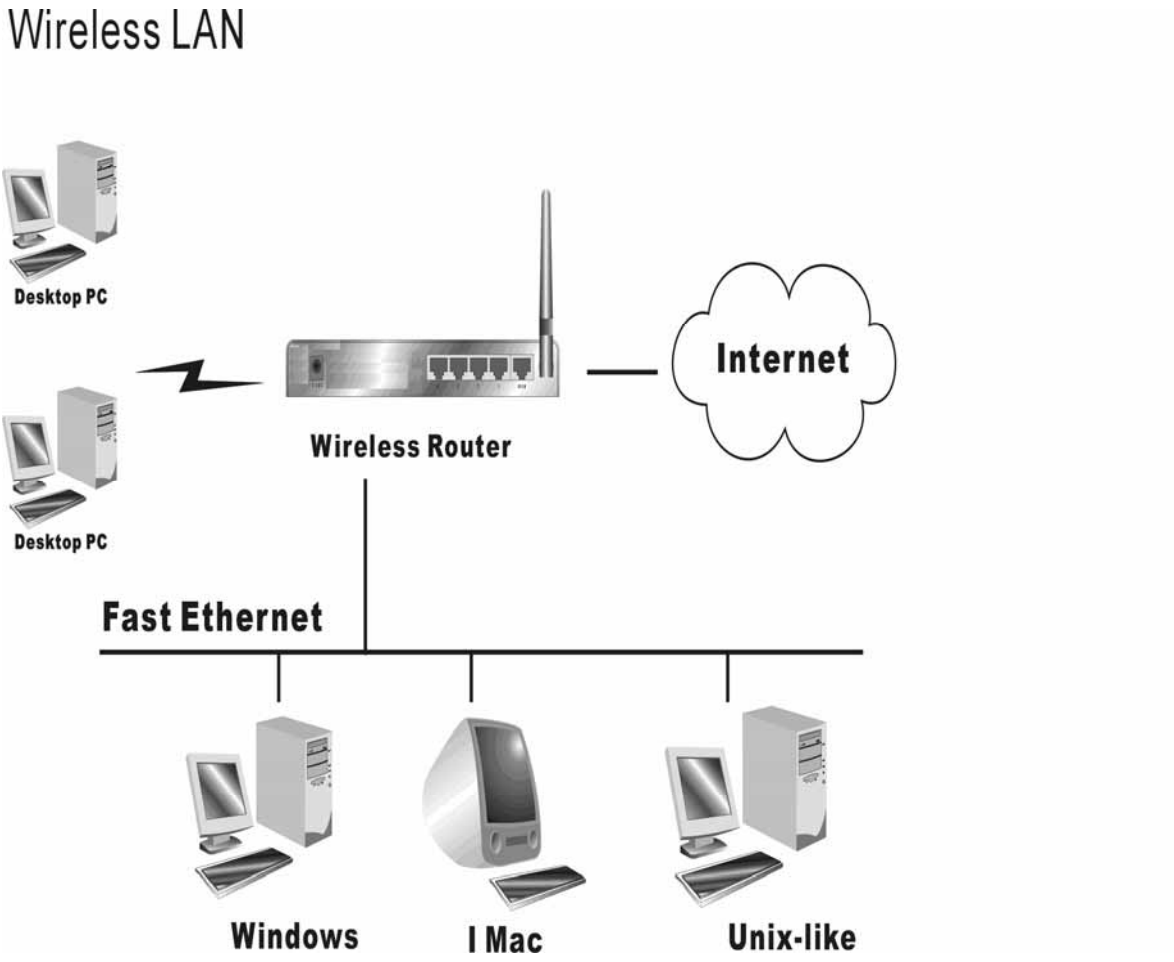
Chapter 4 Configuring the Wireless Broadband Router

This product provides a Web based configuration scheme, that is, the ability to configure the device using your Web browser, such as Netscape Communicator or Internet Explorer. This approach can be adopted on any MS Windows, Macintosh or UNIX based platforms.



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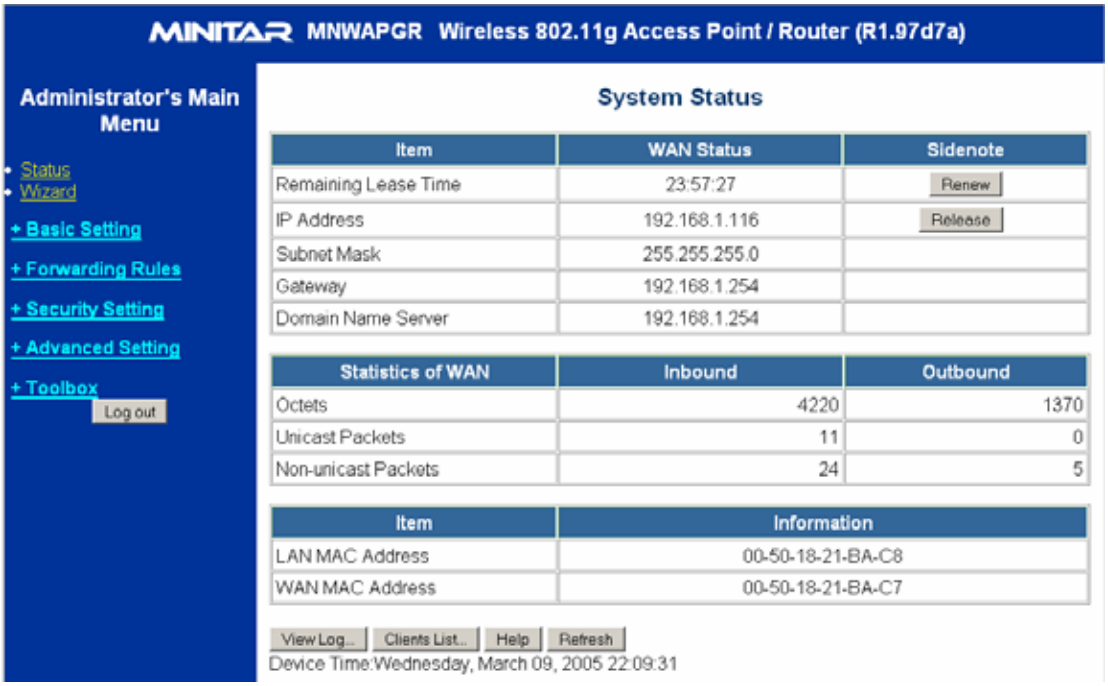
4.1 Start-up and Log in



Activate your browser and either **disable the proxy** or **add the IP address of this product into the proxy exceptions list**. Then, type this product's IP address in the Location (for Netscape) or Address (for IE) field and press ENTER. For example: **http://192.168.123.254**.

After the connection is established, you will see the web user interface of this product. There are two modes of the web user interface: one for general users and one for system administrator.

To log in as an administrator, enter the system password (the factory setting is "**admin**") in the **System Password** field and click on the **Log in** button. If the password is correct, the web mode will be changed into administrator configuration mode. As listed in the main menu, there are several options for system administration.

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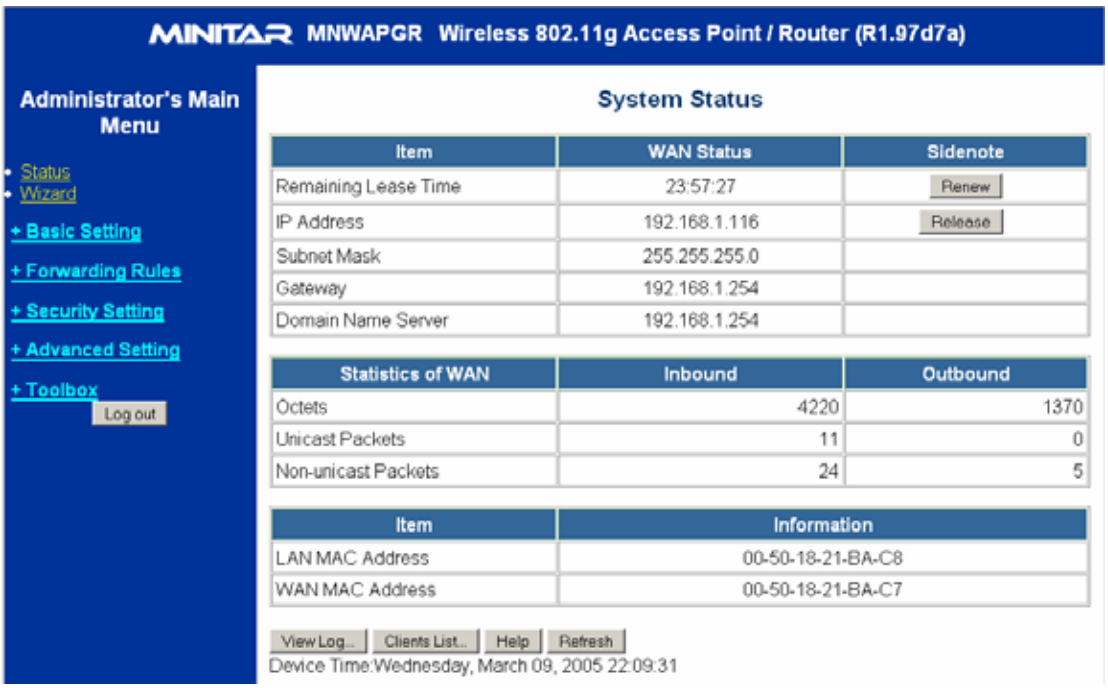
4.2 Status



This option provides the function of observing this product's working status:

A. WAN Port Status.

If the WAN port is assigned a dynamic IP, there may appear a "**Renew**" or "**Release**" button on the Sidenote column. You can click these buttons to renew or release the IP manually.

B. Statistics of WAN: enables you to monitor inbound and outbound packets on the WAN connection

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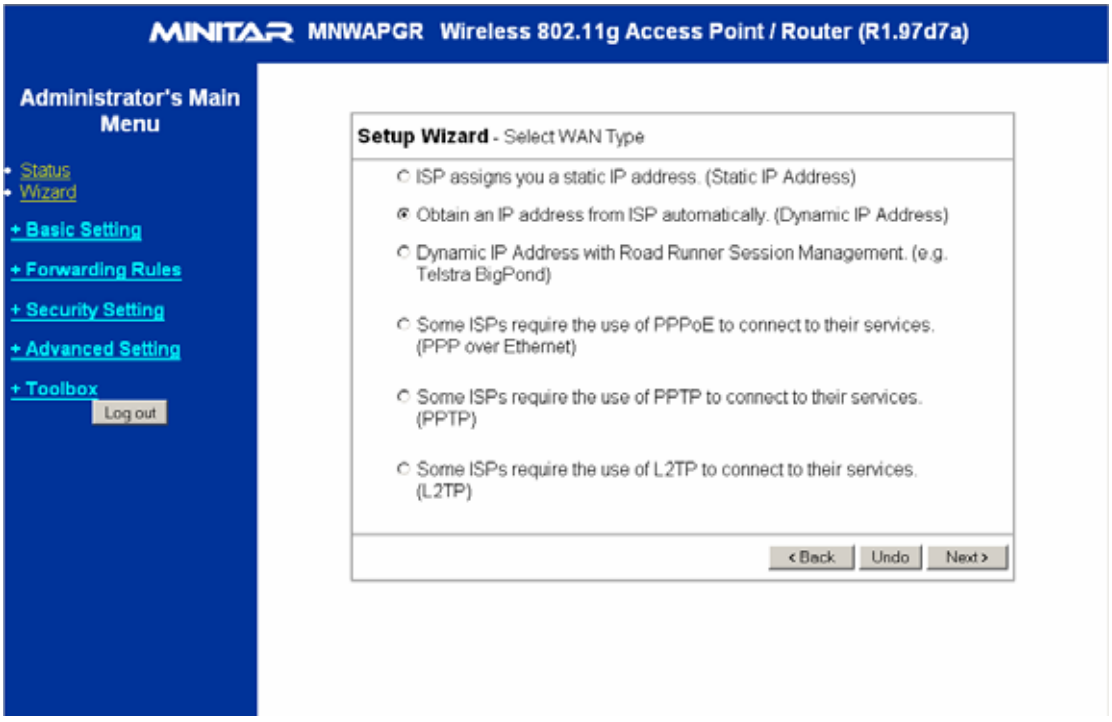
4.3 Wizard

The Setup Wizard will guide you through a basic configuration procedure step by step.

Press **"Next >"**


MINITAR MNWAPGR Wireless 802.11g Access Point / Router (R1.97d7a)
Administrator's Main Menu
Status
Wizard
+ Basic Setting
+ Forwarding Rules
+ Security Setting
+ Advanced Setting
+ Toolbox
Log out
Setup Wizard - Select WAN Type
ISP assigns you a static IP address. (Static IP Address)
Obtain an IP address from ISP automatically. (Dynamic IP Address)
Dynamic IP Address with Road Runner Session Management. (e.g. Telstra BigPond)
Some ISPs require the use of PPPoE to connect to their services. (PPP over Ethernet)
Some ISPs require the use of PPTP to connect to their services. (PPTP)
Some ISPs require the use of L2TP to connect to their services. (L2TP)
< Back
Undo
Next >

Setup Wizard - Select WAN Type: For detail settings, please refer to **4.4.1 primary setup.**

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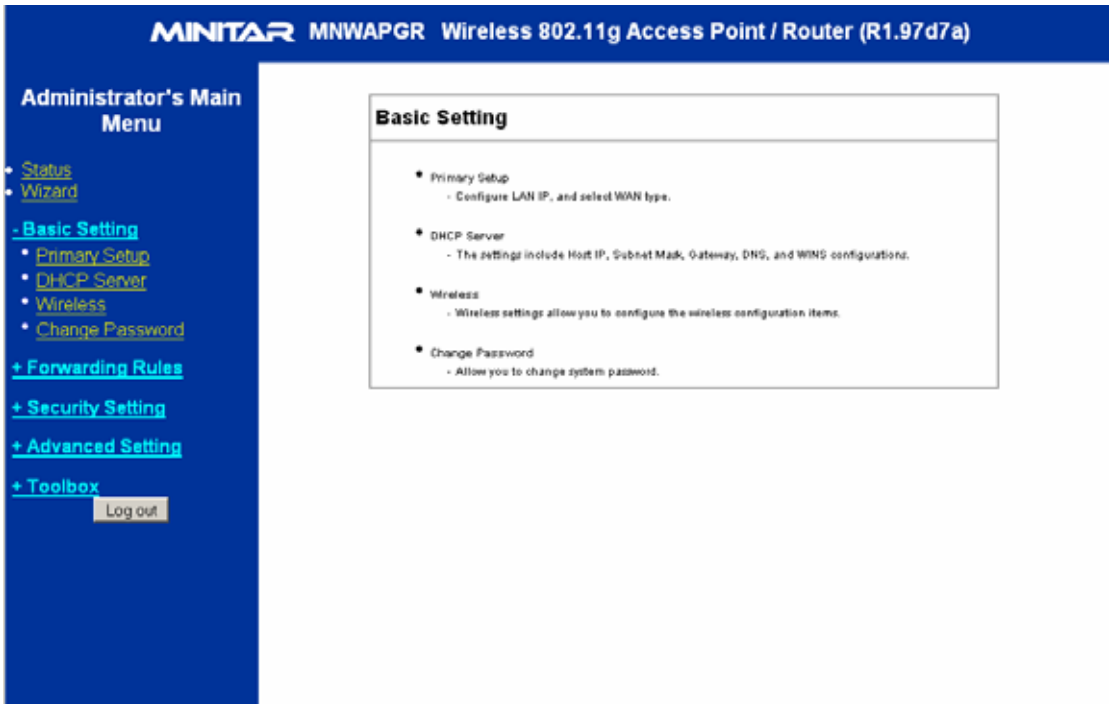
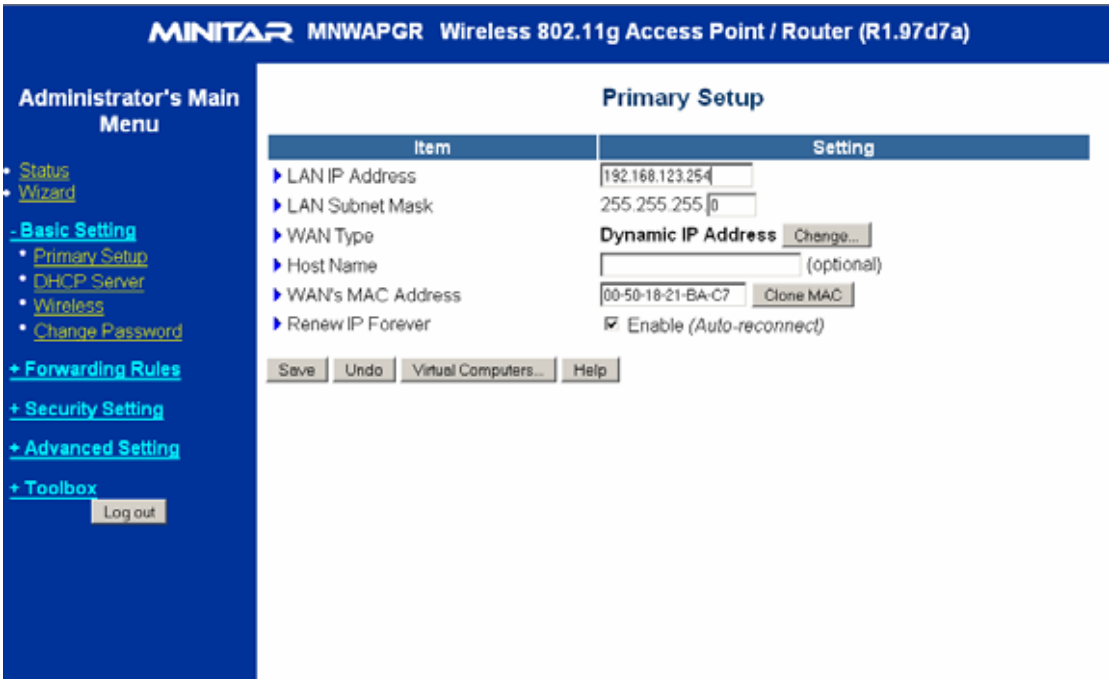
4.4 Basic Setting



4.4.1 Primary Setup – WAN Type, Virtual Computers



Press **"Change"**

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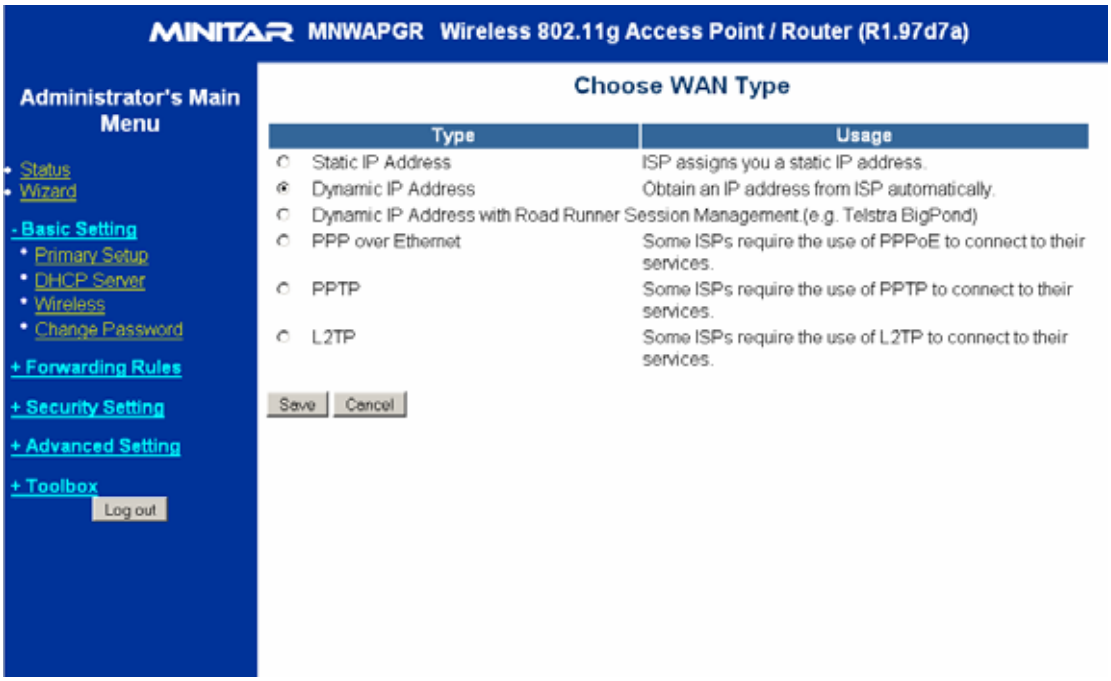

This option is required to enable this product to work properly. Please choose the correct WAN type before you start.

1. **LAN IP Address**: the local IP address of this device. The computers on your network must use the LAN IP address of your product as their Default Gateway. You can change it if necessary.
2. **WAN Type**: The WAN connection type of your ISP. You can click **Change** button to choose a correct type from the following five options:
   A. Static IP Address: ISP assigns you a static IP address.
   B. Dynamic IP Address: Obtain an IP address from ISP automatically.
   C. Dynamic IP Address with Road Runner Session Management.(e.g. Telstra BigPond)
   D. PPP over Ethernet: Some ISPs require the use of PPPoE to connect to their services.
   E. PPTP: Some ISPs require the use of PPTP to connect to their services.

4.4.1.1 Static IP Address

WAN IP Address, Subnet Mask, Gateway, Primary and Secondary DNS: enter the proper setting provided by your ISP.

4.4.1.2 Dynamic IP Address

1. Host Name: optional. Required by some ISPs, for example, @Home.
2. Renew IP Forever: this feature enables this product to renew the IP address automatically when the lease time expires, even when the system is idle.

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4.4.1.3 Dynamic IP Address with Road Runner Session Management.

(e.g. Telstra BigPond)

1. LAN IP Address is the IP address of this product. It must be the default gateway of your computers.
2. WAN Type is Dynamic IP Address. If the WAN type is not correct, change it!
3. Host Name: optional. Required by some ISPs, e.g. @Home.
4. Renew IP Forever: this feature enable this product to renew the IP address automatically when the lease time expires, even the system is in idle state.

4.4.1.4 PPP over Ethernet

1. PPPoE Account and Password: the account and password your ISP assigned to you. For security, this field appears blank. If you don't want to change the password, leave it empty.
2. PPPoE Service Name: optional. Input the service name if your ISP requires it. Otherwise, leave it blank.
3. Maximum Idle Time: the amount of time of inactivity before disconnecting your PPPoE session. Set it to zero or enable Auto-reconnect to disable this feature.
4. Maximum Transmission Unit (MTU): Most ISP offer a MTU value to their users. The most common MTU value is 1492.

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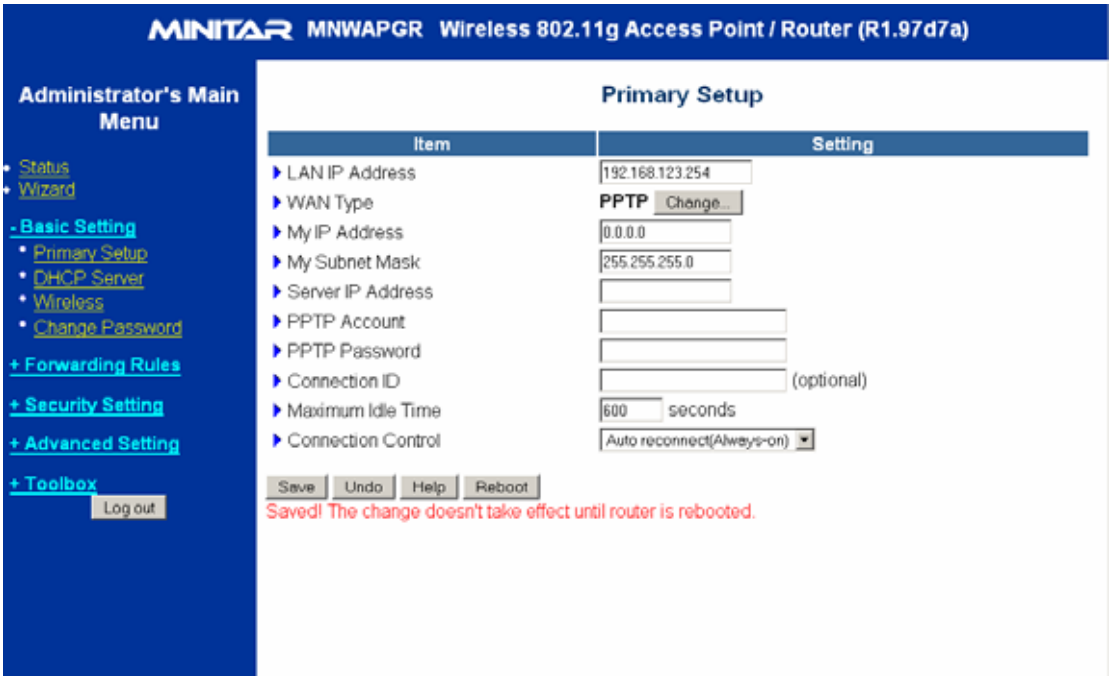
4.4.1.5 PPTP

1. My IP Address and My Subnet Mask: the private IP address and subnet mask your ISP assigned to you.
2. Server IP Address: the IP address of the PPTP server.
3. PPTP Account and Password: the account and password your ISP assigned to you. If you don't want to change the password, keep it empty.
3. Connection ID: optional. Input the connection ID if your ISP requires it.
4. Maximum Idle Time: the time of no activity to disconnect your PPTP session. Set it to zero or enable Auto-reconnect to disable this feature. If Auto-reconnect is enabled, this product will connect to ISP automatically, after system is restarted or the connection is dropped.



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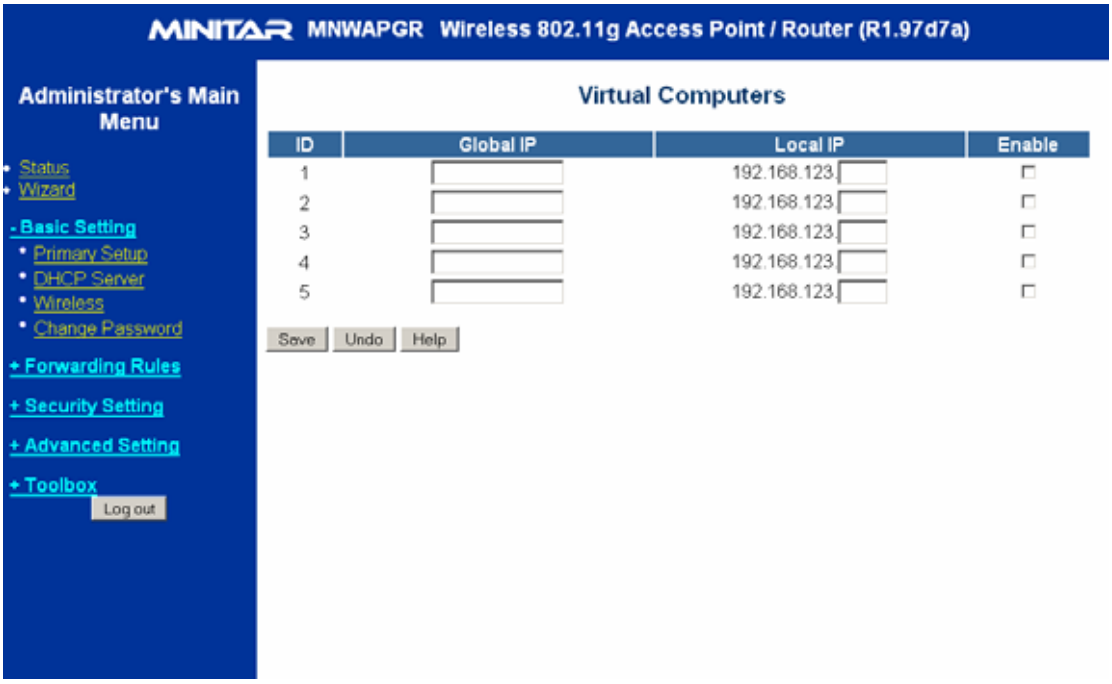
4.4.1.6 Virtual Computers



The Virtual Computer function enables you to use the original NAT feature, and allows you to setup a one-to-one mapping of multiple global IP address and local IP address.

- Global IP: Enter the global IP address assigned by your ISP.
- Local IP: Enter the local IP address of your LAN PC corresponding to the global IP address.
- Enable: Check this item to enable the Virtual Computer feature.

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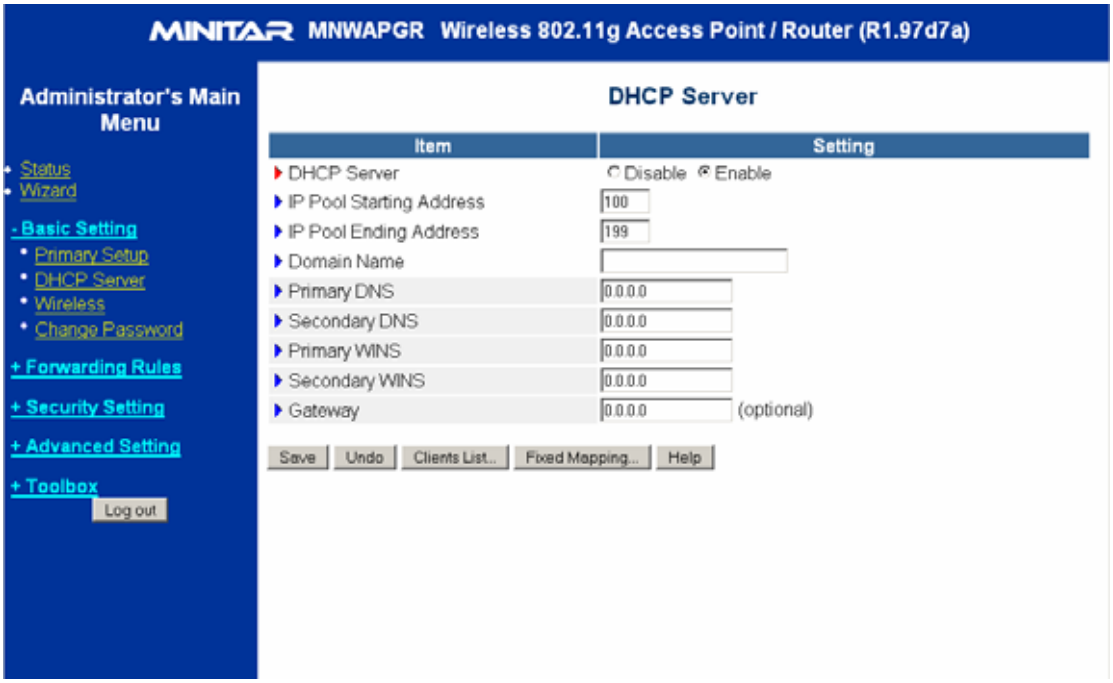
4.4.2 DHCP Server



Press **"More>>"**

The settings of a TCP/IP environment include host IP, Subnet Mask, Gateway, and DNS configurations. It is not easy to manually configure all the computers and devices in your network. Fortunately, a DHCP Server provides a rather simple approach to handle all these settings. This product supports the function of DHCP server. If you enable this product's DHCP server and configure your computers as "automatic IP allocation" mode, then when your computer is powered on, it will automatically load the proper TCP/IP settings from this product. The settings of DHCP server include the following items:

1. **DHCP Server**: Choose "Disable" or "Enable."
2. **Lease Time:** this feature allows you to configure the IP's lease time (DHCP client).
3. **IP pool starting Address/ IP pool starting Address**: Whenever there is a request, the DHCP server will automatically allocate an unused IP address from the IP address pool to the requesting computer. You must specify the starting and ending address of the IP address pool.
4. **Domain Name**: Optional, this information will be passed to the client.
5. **Primary DNS/Secondary DNS**: This feature allows you to assign DNS Servers
6. **Primary WINS/Secondary WINS**: This feature allows you to assign WINS Servers
7. **Gateway**: The Gateway Address would be the IP address of an alternate Gateway other than this device..

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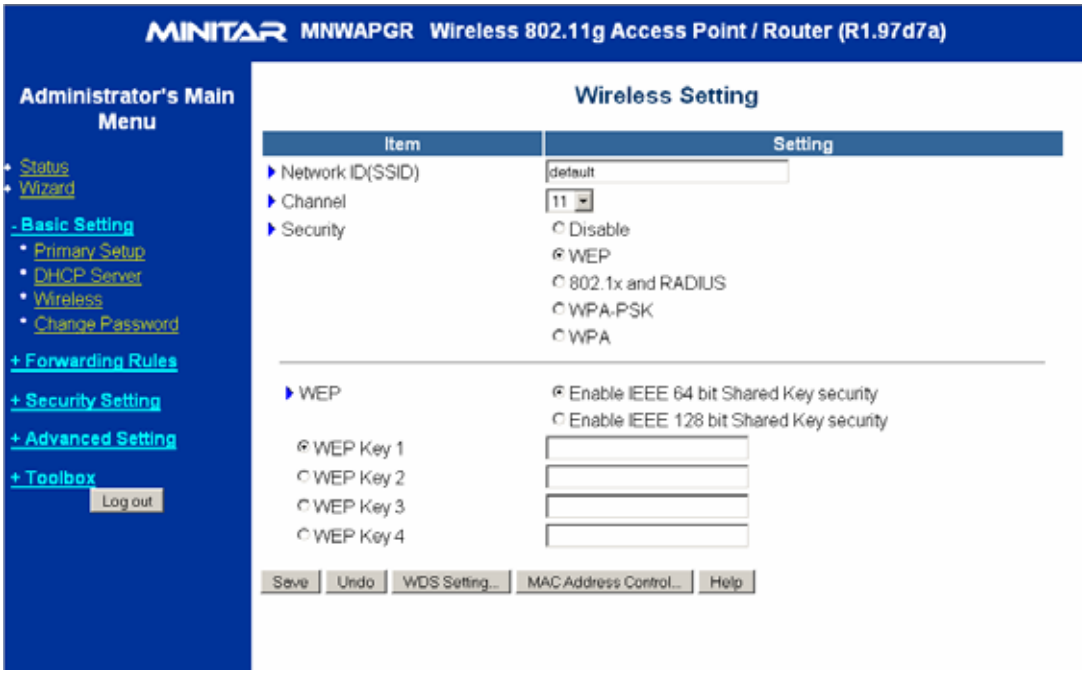
4.4.3 Wireless Setting, and 802.1X setting



Wireless settings allow you to set the wireless configuration items.

1. **Network ID (SSID)**: The Network ID is used for identifying the Wireless LAN (WLAN). Client stations can roam freely between this product and other Access Points that have the same Network ID. (The factory setting is "**default**")
2. **Channel**: The radio channel number. The permissible channels depend on the Regulatory Domain. The factory setting is as follows: **channel 6** for North America; **channel 7** for European (ETSI); **channel 7** for Japan.
3. **WEP Security**: Select the data privacy algorithm you want. Enabling the security can protect your data while it is transferred from one station to another. The standardized IEEE 802.11 WEP (128 or 64-bit) is used here.
4. **WEP Key 1, 2, 3 & 4**: When you enable the 128 or 64 bit WEP key security, please select one WEP key to be used and input 26 or 10 hexadecimal (0, 1, 2…8, 9, A, B…F) digits.
5. Pass-phrase Generator: Since hexadecimal characters are not easily remembered, this device offers a conversion utility to convert a simple word or phrase into hex.

6. **802.1X Setting:** This Check Box is used to switch on and off the function of the 802.1X. When the 802.1X function is enabled, the Wireless user must **authenticate** to this router first to use the Network service.

RADIUS Server: IP address or the 802.1X server's domain-name.

RADIUS Shared Key: Key value shared by the RADIUS server and this router. This key value needs to be consistent with the key value in the RADIUS server.

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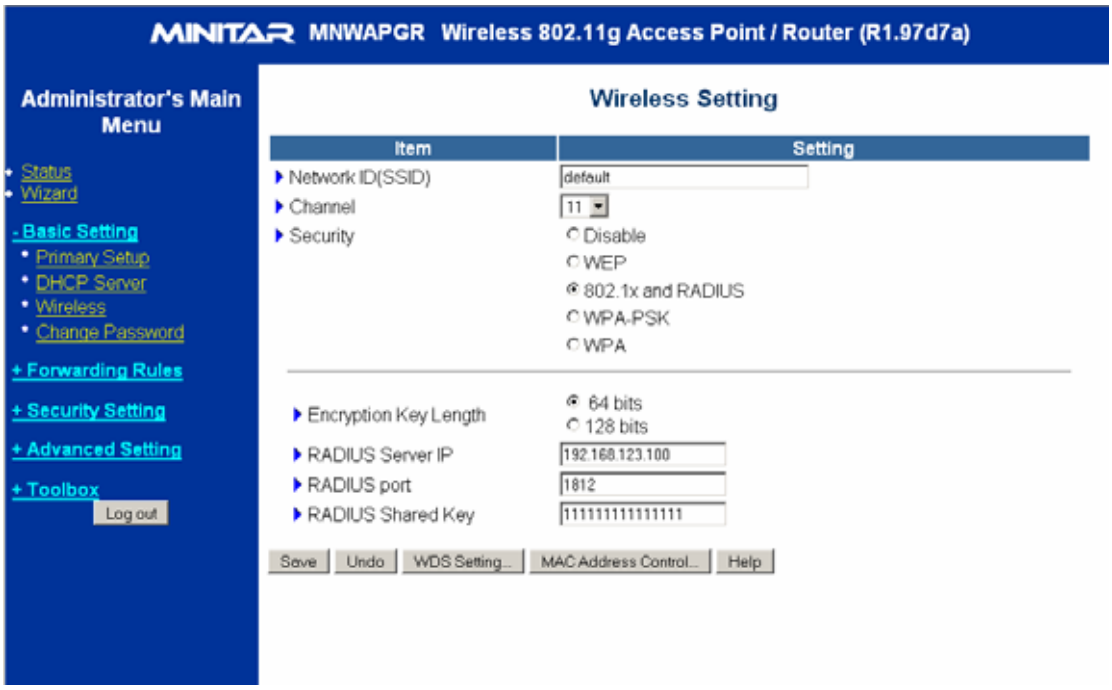

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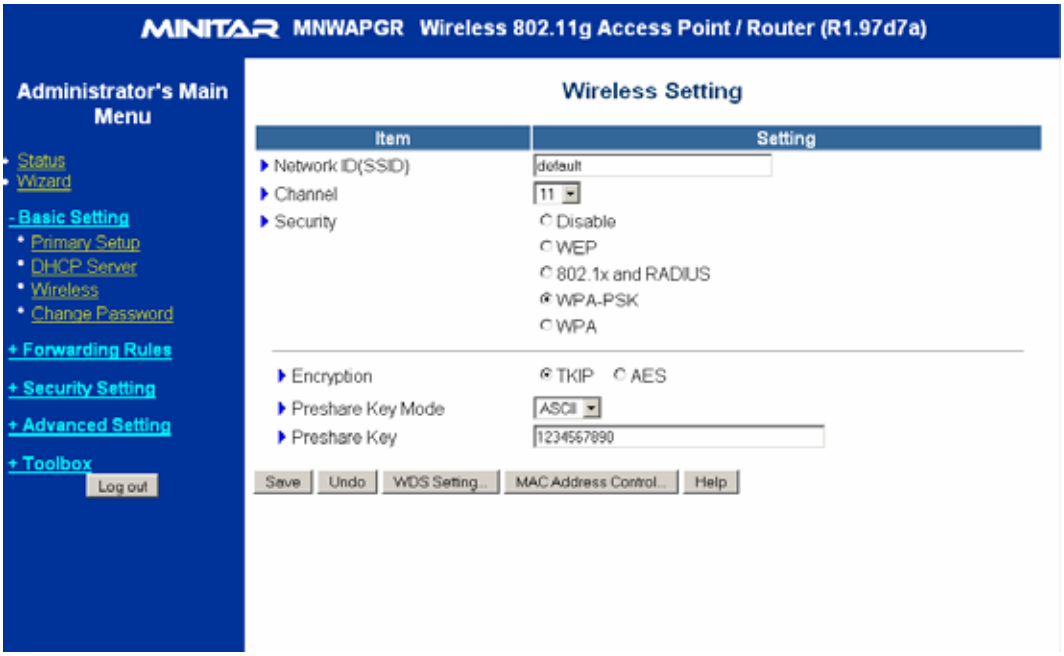
WPA-PSK

1. Select Preshared Key Mode
2. Fill in the key, Example: 12345678

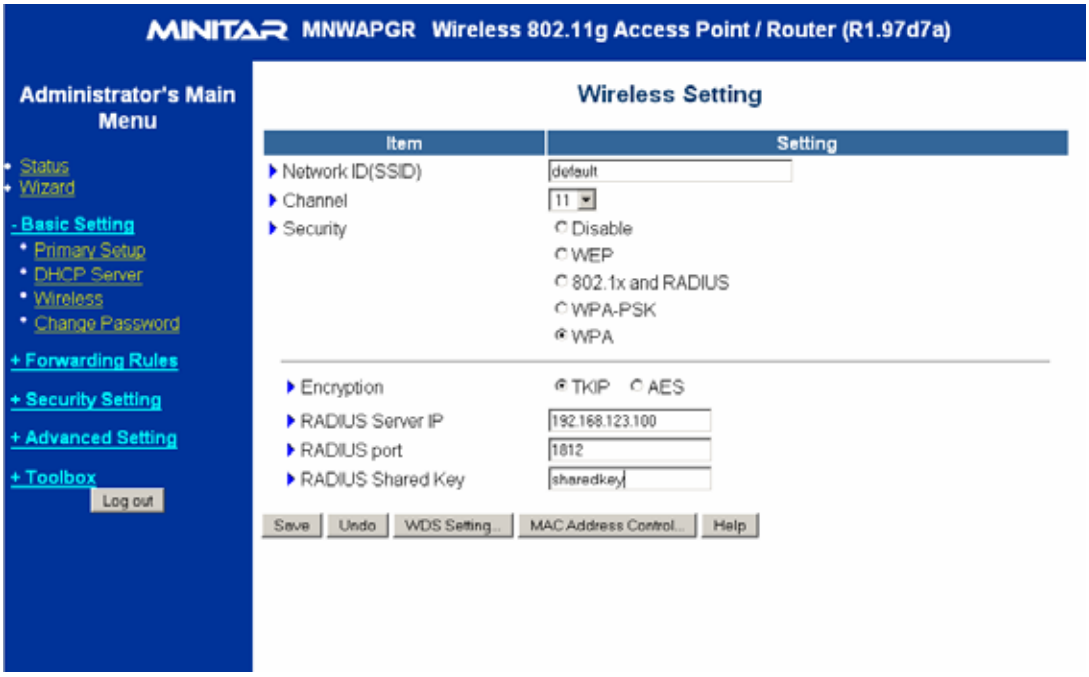


WPA

Check Box is used to switch on and off the function of the WPA. When the WPA function is enabled, the Wireless user must **authenticate** to this router first to use the Network service.

RADIUS Server: IP address or the 802.1X server's domain-name.

RADIUS Shared Key: Key value shared by the RADIUS server and this router. This key value must be consistent with the key value in the RADIUS server.



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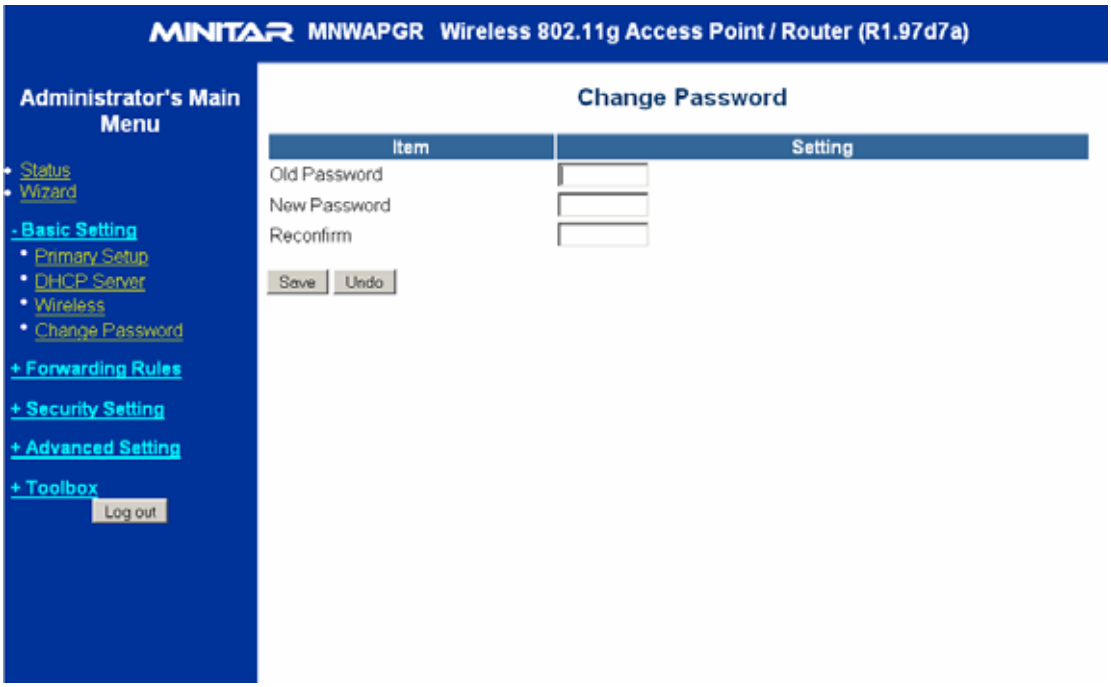
4.4.4 Change Password



You can change Password here. We **strongly** recommend you to change the system password for security reasons.

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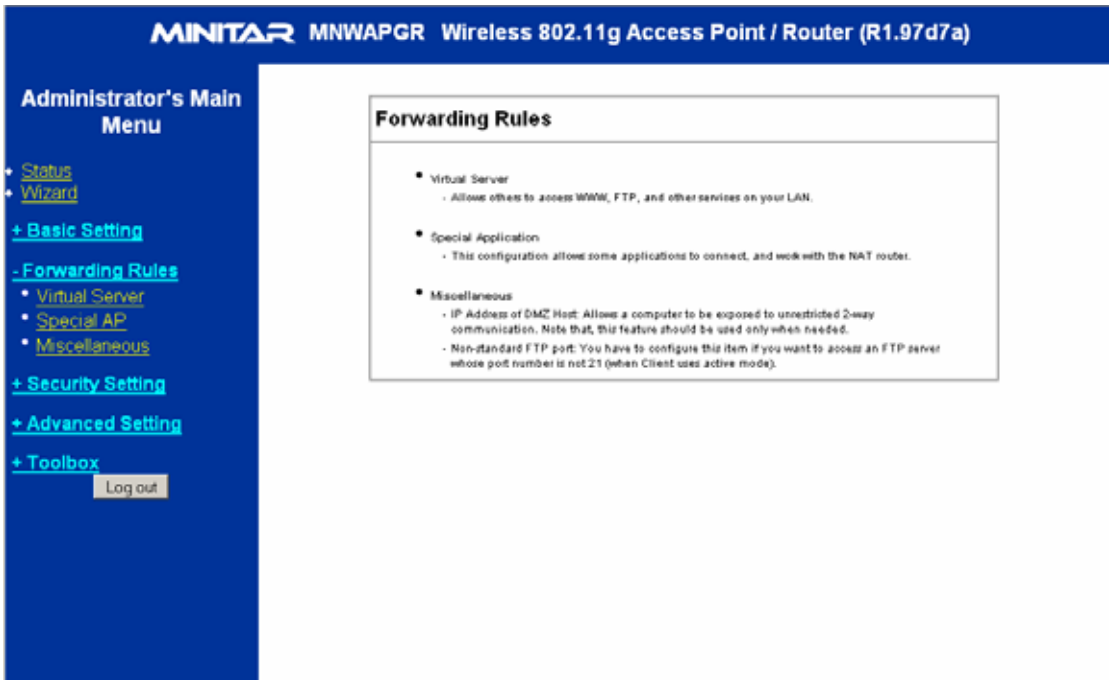
4.5 Forwarding Rules


MINITAR MNWAPGR Wireless 802.11g Access Point / Router (R1.97d7a)
Administrator's Main Menu
Status
Wizard
+ Basic Setting
- Forwarding Rules
Virtual Server
Special AP
Miscellaneous
+ Security Setting
+ Advanced Setting
+ Toolbox
Log out
Forwarding Rules
Virtual Server
Allows others to access WWW, FTP, and other services on your LAN.
Special Application
This configuration allows some applications to connect, and work with the NAT router.
Miscellaneous
IP Address of DMZ Host: Allows a computer to be exposed to unrestricted 2-way communication. Note that, this feature should be used only when needed.
Non-standard FTP port: You have to configure this item if you want to access an FTP server whose port number is not 21 (when Client uses active mode).

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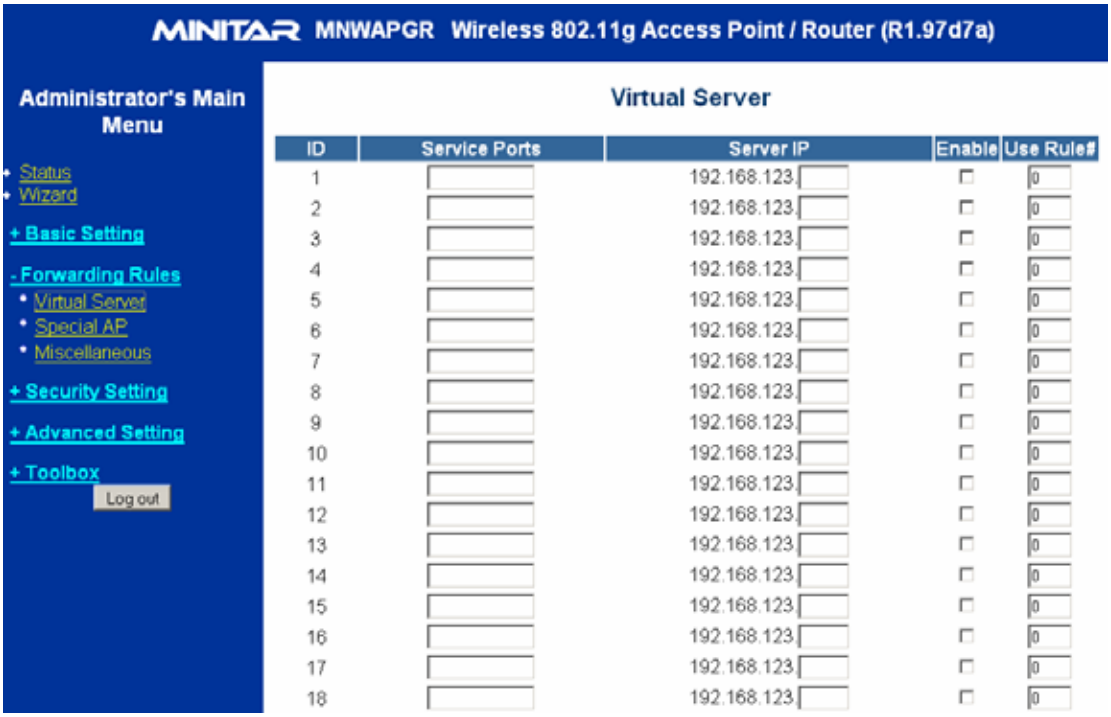
4.5.1 Virtual Server



This product's NAT firewall filters out unrecognized packets to protect your Intranet, so all hosts behind this product are invisible to the outside world. If you wish, you can make some of them accessible by enabling the Virtual Server Mapping.

A virtual server is defined as a **Service Port**, and all requests to this port will be redirected to the computer specified by the **Server IP**. The **Virtual Server** can work with the **Scheduling Rules**, and give the user more flexibility on Access control. For Detail, please refer to **Scheduling Rule**.

For example, if you have an FTP server (port 21) at 192.168.123.1, a Web server (port 80) at 192.168.123.2, and a VPN server at 192.168.123.6, then you need to specify the following virtual server mapping table:

Service Port	Server IP	Enable
21	192.168.123.1	V
80	192.168.123.2	V
1723	192.168.123.6	V

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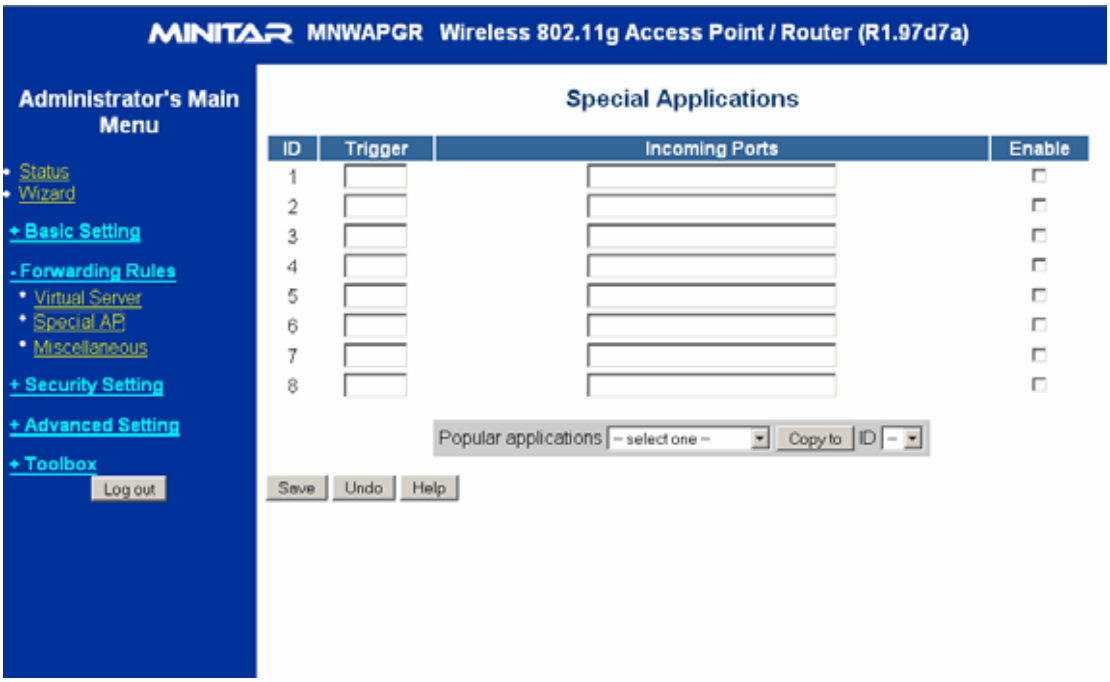
4.5.2 Special AP



Some applications require multiple connections, like Internet games, Video conferencing, Internet telephony, etc. Because of the firewall function, these applications cannot work with a pure NAT router. The **Special Applications** feature allows some of these applications to work with this product. If the mechanism of Special Applications fails to make an application work, try setting your computer as the **DMZ** host instead.

1. **Trigger**: the outbound port number issued by the application..
2. **Incoming Ports**: when the trigger packet is detected, the inbound packets sent to the specified port numbers are allowed to pass through the firewall.

This product provides some predefined settings Select your application and click '**Copy to'** to add the predefined setting to your list.

Note: At any given time, only one PC can use each Special Application tunnel.

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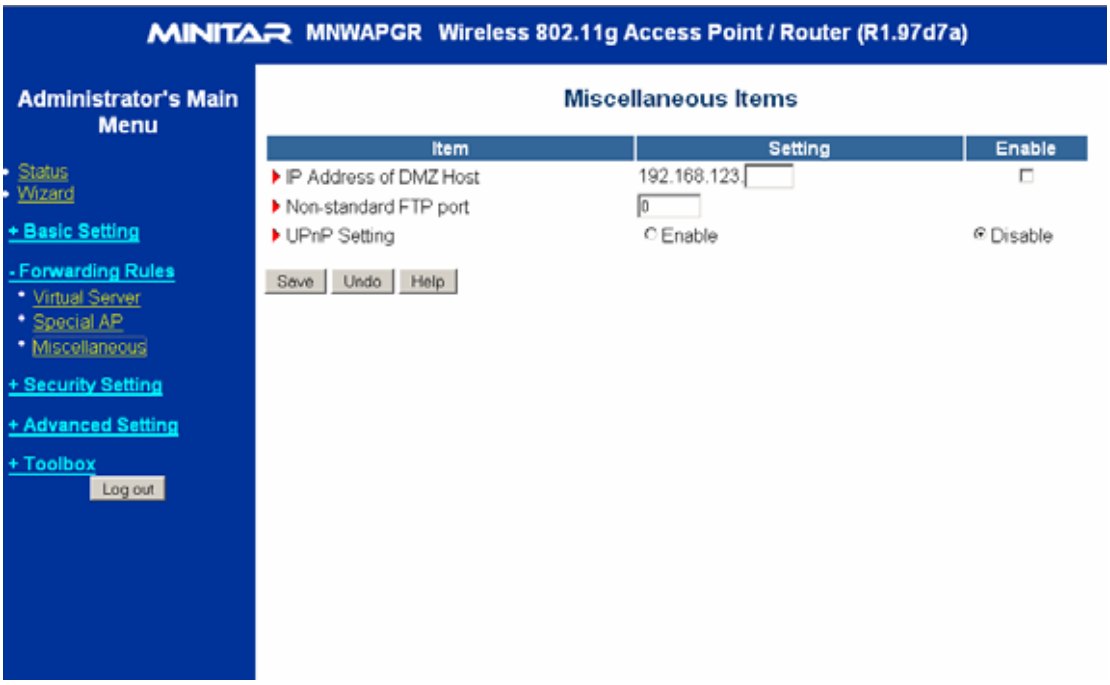
4.5.3 Miscellaneous Items



IP Address of DMZ Host

A DMZ (Demilitarized Zone) Host is a host without the protection of the firewall. It allows a computer to be exposed to unrestricted 2-way communication for Internet games, Video conferencing, Internet telephony and other special applications.

NOTE: This feature should be used only when needed. A software firewall application should be installed on the DMZ host as otherwise it will be unprotected.

Non-standard FTP port

You have to configure this item if you want to access an FTP server whose port number is not 21. This setting will be lost after rebooting.

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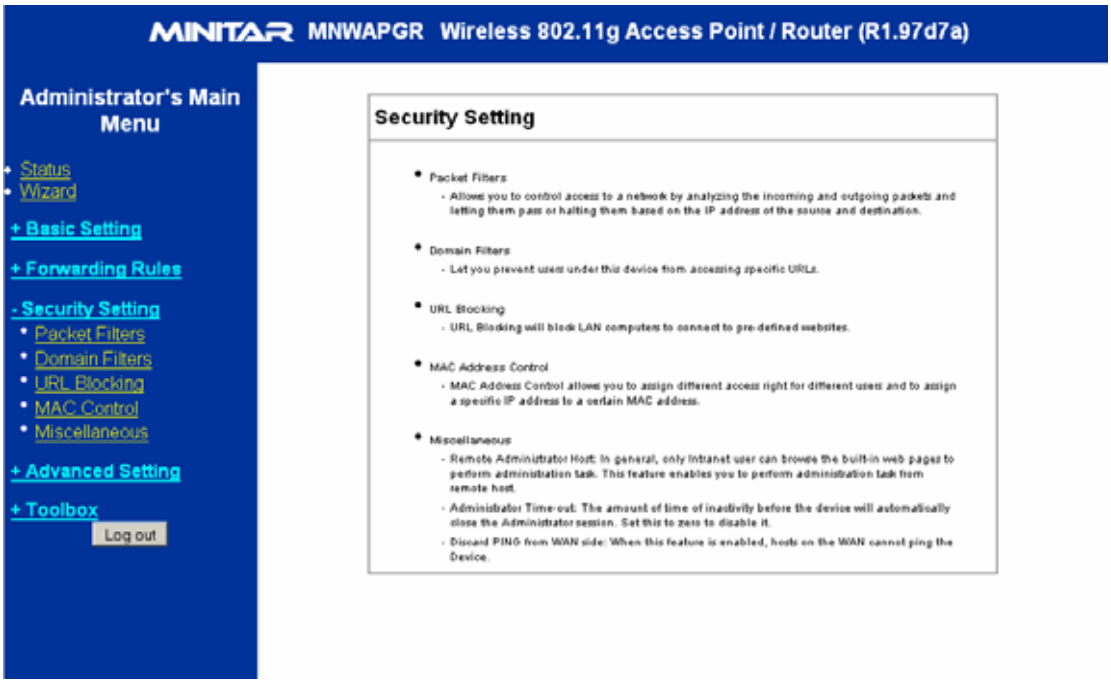
4.6 Security Settings

4.6.1 Packet Filter


MINITAR MNWAPGR Wireless 802.11g Access Point / Router (R1.97d7a)
Administrator's Main Menu
Status
Wizard
+ Basic Setting
+ Forwarding Rules
- Security Setting
Packet Filters
Domain Filters
URL Blocking
MAC Control
Miscellaneous
+ Advanced Setting
+ Toolbox
Log out
Security Setting
Packet Filters
- Allows you to control access to a network by analyzing the incoming and outgoing packets and letting them pass or halting them based on the IP address of the source and destination.
Domain Filters
- Let you prevent users under this device from accessing specific URLs.
URL Blocking
- URL Blocking will block LAN computers to connect to pre-defined websites.
MAC Address Control
- MAC Address Control allows you to assign different access right for different users and to assign a specific IP address to a certain MAC address.
Miscellaneous
- Remote Administrator Host: In general, only Intranet user can browse the built-in web pages to perform administration task. This feature enables you to perform administration task from remote host.
- Administrator Time-out: The amount of time of inactivity before the device will automatically close the Administrator session. Set this to zero to disable it.
- Discard PING from WAN side: When this feature is enabled, hosts on the WAN cannot ping the Device.

The Packet Filter enables you to control what packets are allowed to pass through the router. The Outbound filter applies on all outbound packets. However, the Inbound filter applies on packets that are destined to the Virtual Servers or DMZ host only. You can select one of the two filtering policies:

1. Allow all to pass except those matching the specified rules
2. Deny all to pass except those matching the specified rules

You can specify 8 rules for each direction: inbound or outbound. For each rule, you can define the following:

- Source IP address
- Source port address
- Destination IP address
- Destination port address
- Protocol: TCP or UDP or both.
- Use Rule#

For source or destination IP address, you can define a single IP address (4.3.2.1) or a range of IP addresses (4.3.2.1-4.3.2.254). An empty entry implies all IP addresses.
For source or destination port, you can define a single port (80) or a range of ports (1000-1999). Add prefix "T" or "U" to specify TCP or UDP protocol. For example, T80, U53,

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U2000-2999. No prefix indicates both TCP and UDP are defined. An empty implies all port addresses. The **Packet Filter** can work with the **Scheduling Rules**, and give the user more flexibility on Access control. For Detail, please refer to the **Scheduling Rule**.

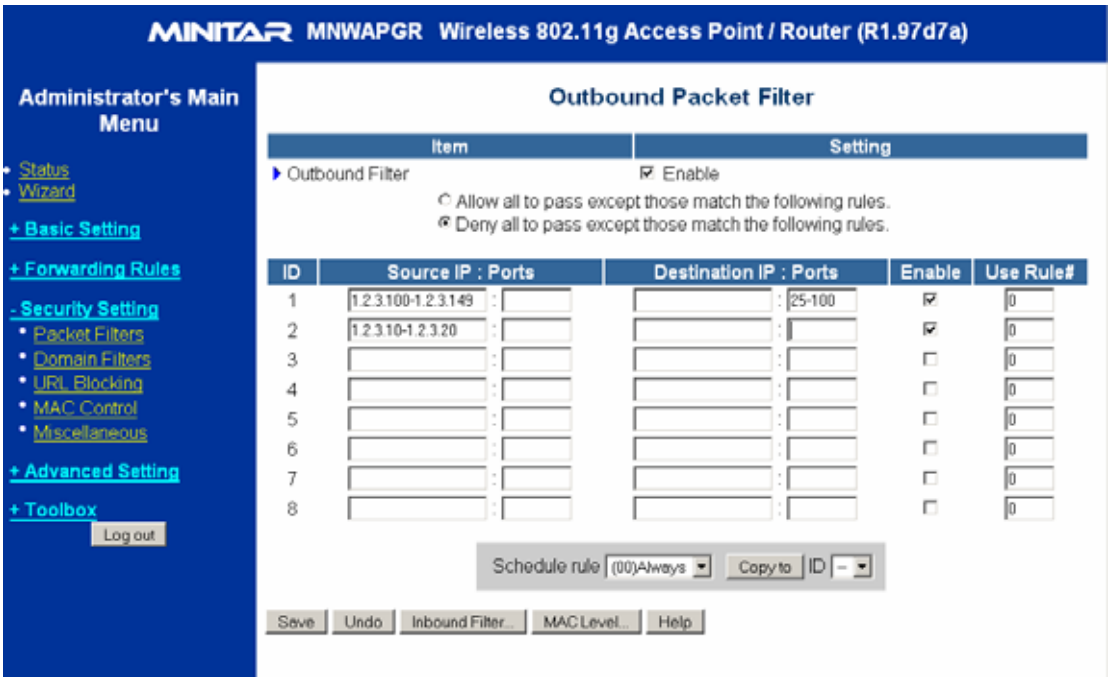
Each rule can be enabled or disabled individually.

Inbound Filter:

To enable the **Inbound Packet Filter** click the check box next to **Enable** in the **Inbound Packet Filter** field.

Suppose you have a SMTP Server (25), POP Server (110), Web Server (80), FTP Server (21), and News Server (119) defined in Virtual Server or DMZ Host.

Example 1:



(1.2.3.100-1.2.3.149) They are allowed to send mail (port 25), receive mail (port 110), and browse the Internet (port 80)

(1.2.3.10-1.2.3.20) They can do everything (block nothing)

Others are all blocked.

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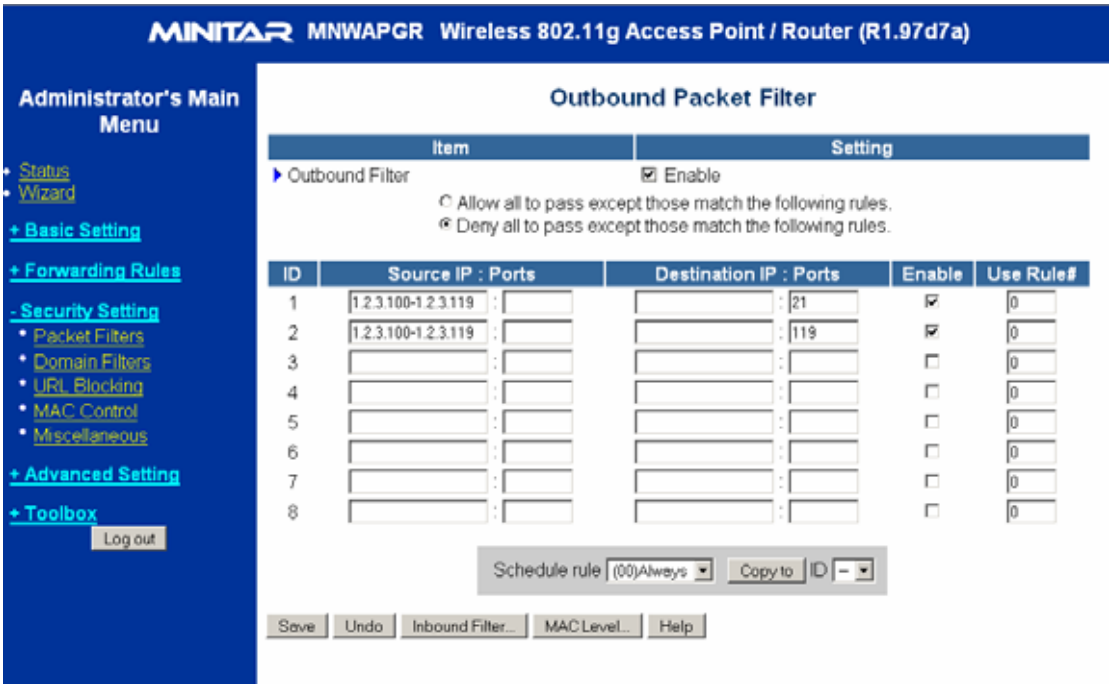
Example 2:



(1.2.3.100-1.2.3.119) They can do everything except read net news (port 119) and transfer files via FTP (port 21)

Others are all allowed.

After the **Inbound Packet Filter** setting is configured, click the **save** button.

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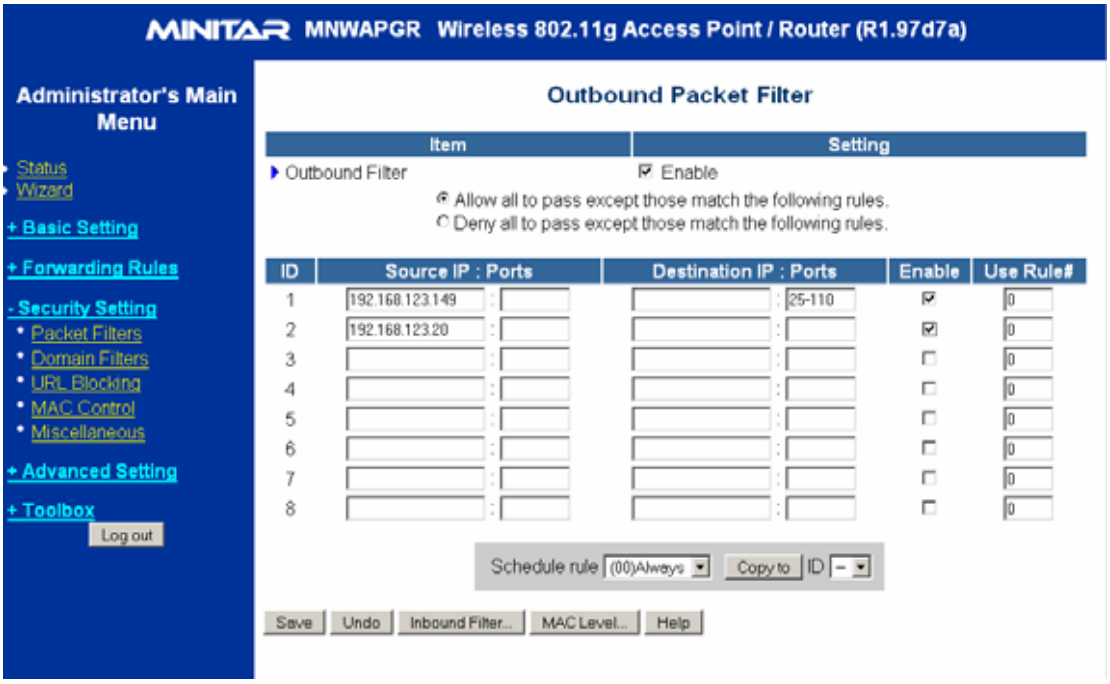
Outbound Filter:

To enable the **Outbound Packet Filter** click the check box next to **Enable** in the **Outbound Packet Filter** field.

Example 1:



(192.168.123.100-192.168.123.149) They are allowed to send mail (port 25), receive mail (port 110), and browse Internet (port 80); port 53 (DNS) is necessary to resolve the domain name.

(192.168.123.10-192.168.123.20) They can do everything (block nothing)

Others are all blocked.

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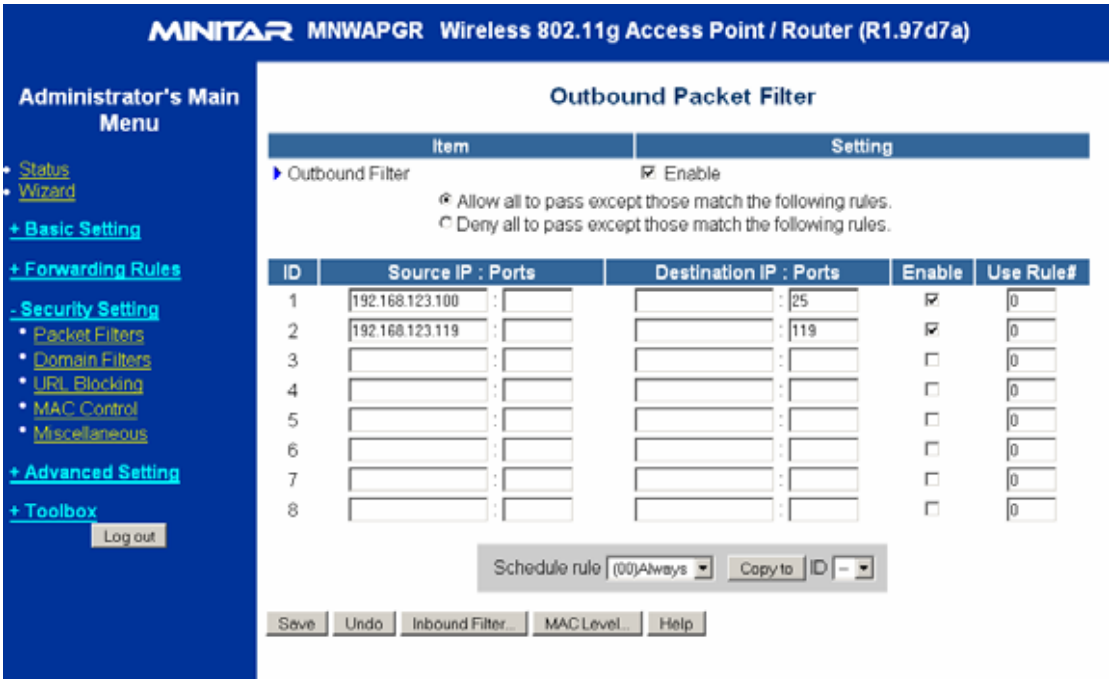
Example 2:



(192.168.123.100-192.168.123.119) They can do everything except read net news (port 119) and transfer files via FTP (port 21)

Others are allowed

After the **Outbound Packet Filter** setting is configured, click the **save** button.

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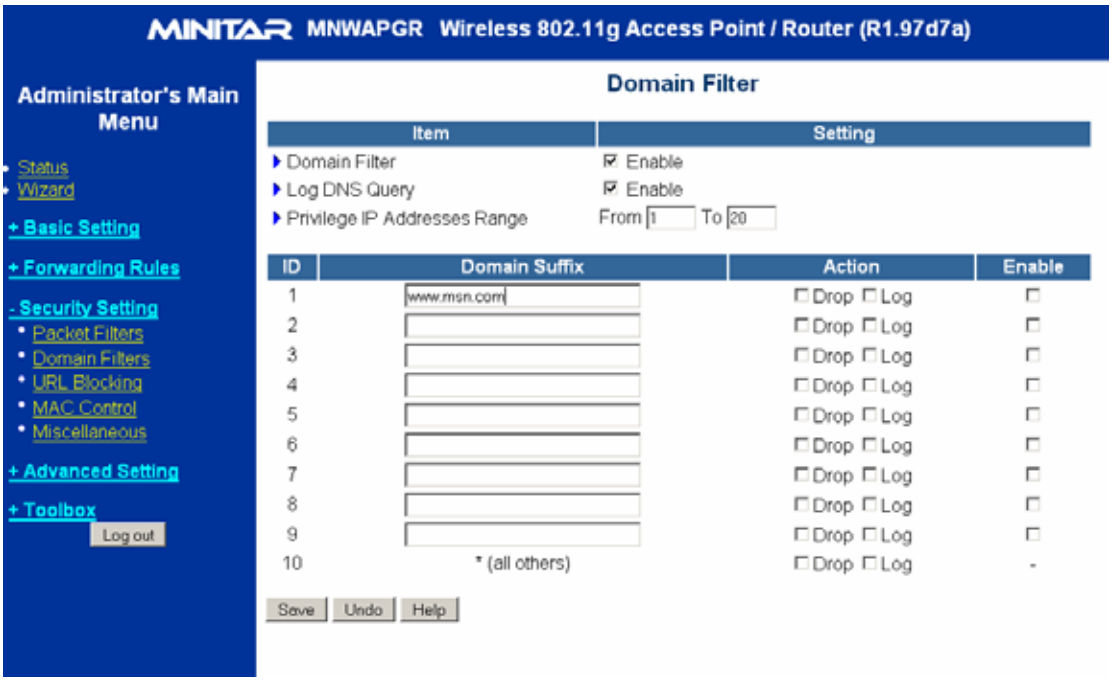
4.6.2 Domain Filter



Domain Filter

Let you prevent users under this device from accessing specific URLs.

Domain Filter Enable

Check if you want to enable Domain Filter.

Log DNS Query

Check if you want to log the action when someone accesses the specific URLs.

Privilege IP Addresses Range

Setting to allow a group of hosts the privilege to access the network without restriction.

Domain Suffix

A suffix of URL to be restricted. For example, ".com", "xxx.com".

Action

When someone is accessing a URL that matches the domain-suffix, what kind of action you want. Check drop to block the access. Check log to log the access.

Enable

Check to enable each rule.

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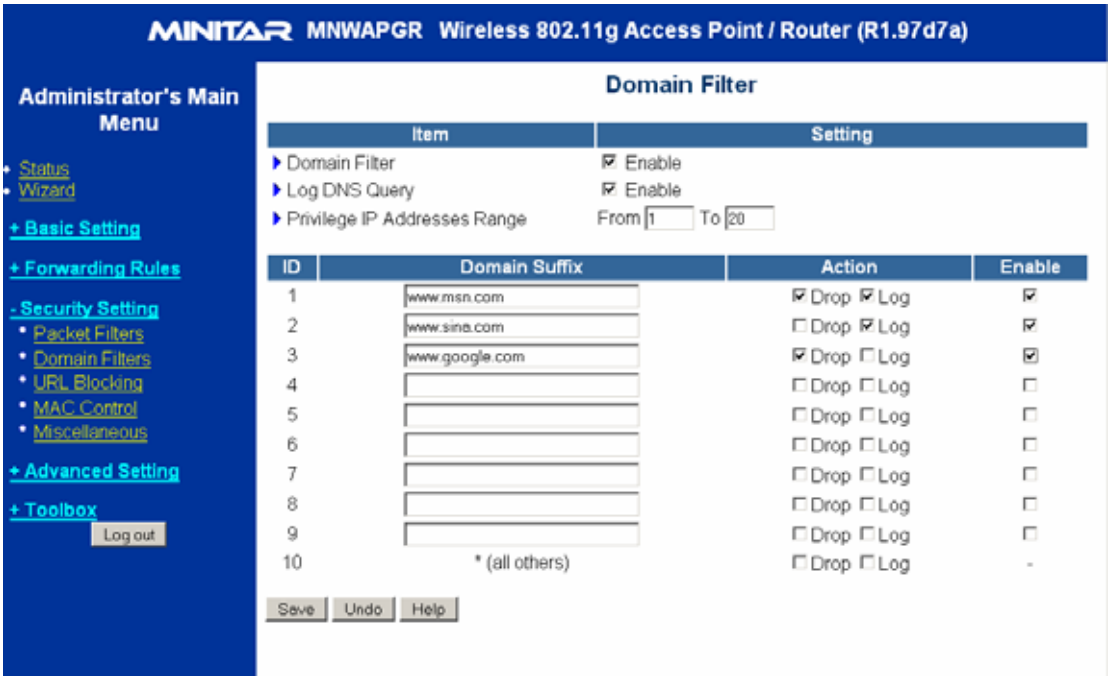
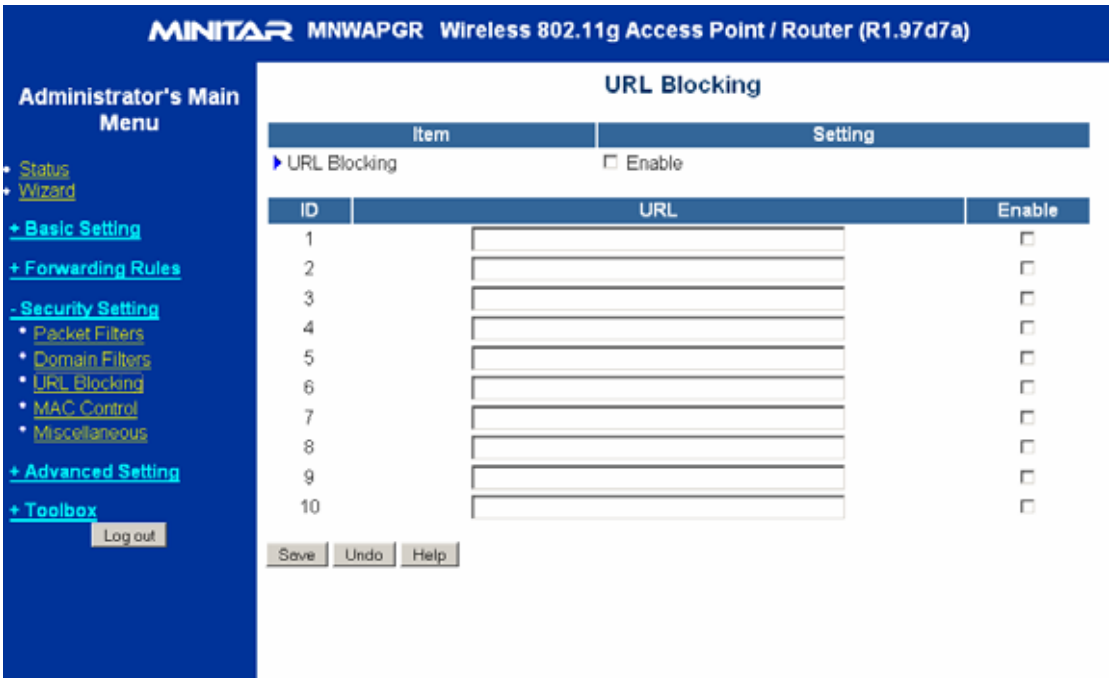
Example:



In this example:

1. URL include “www.msn.com” will be blocked, and the action will be recorded in the log-file.
2. URL include “www.sina.com” will not be blocked, but the action will be recorded in the log-file.
3. URL include “www.google.com” will be blocked, but the action will not be recorded in the log-file.
4. IP address X.X.X.1~ X.X.X.20 can access the network without restriction.

4.6.3 URL Blocking



URL Blocking will block LAN computers to connect to pre-defined Websites.

The major difference between “Domain filter” and “URL Blocking” is the Domain filter requires

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the user to input the DNS suffix (like .com or .org, etc), while URL Blocking requires the user to input a keyword only. In other words, the Domain filter can block specific websites, while URL Blocking can block hundreds of websites by simply providing a **keyword**.

URL Blocking Enable

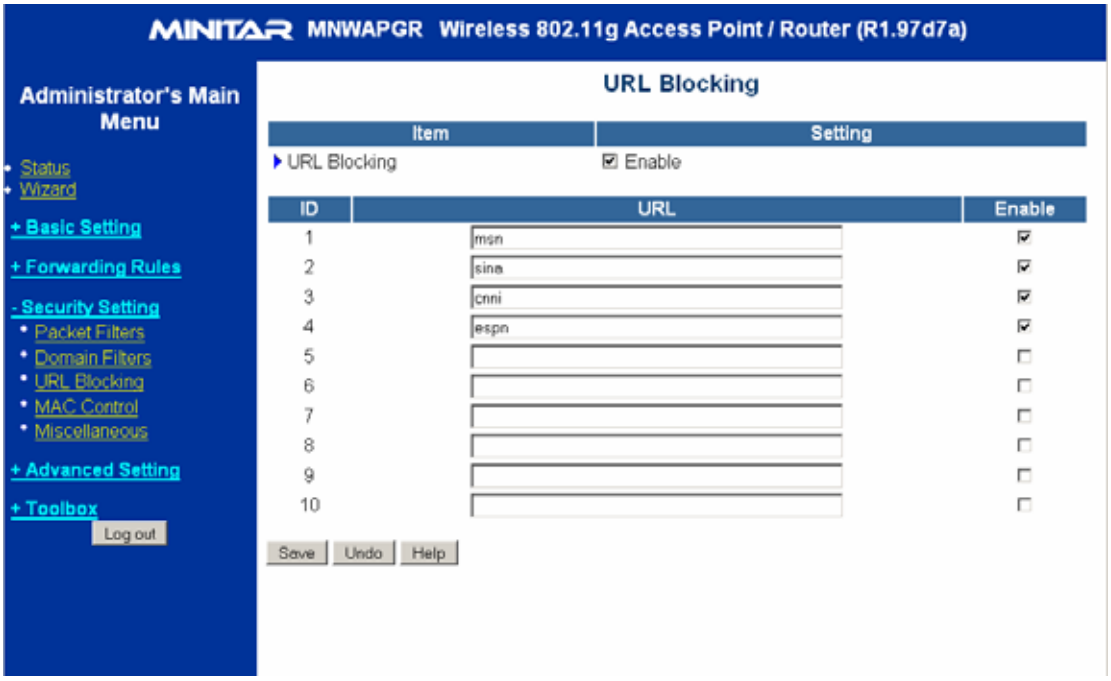
Check if you want to enable URL Blocking.

URL

If any part of the Website's URL matches the pre-defined word, the connection will be blocked. For example, you can use the pre-defined word "sex" to block all websites if their URLs contain the pre-defined word "sex".

Enable

Checked to enable each rule.



In this example:

1. Any URL that includes “msn” will be blocked, and the action will be recorded in the log-file.
2. Any URL that includes “sina” will be blocked, but the action will be recorded in the log-file
3. Any URL that includes “cnnsi” will not be blocked, but the action will be recorded in the log-file.
4. Any URL that includes “espn” will be blocked, but the action will be recorded in the log-file

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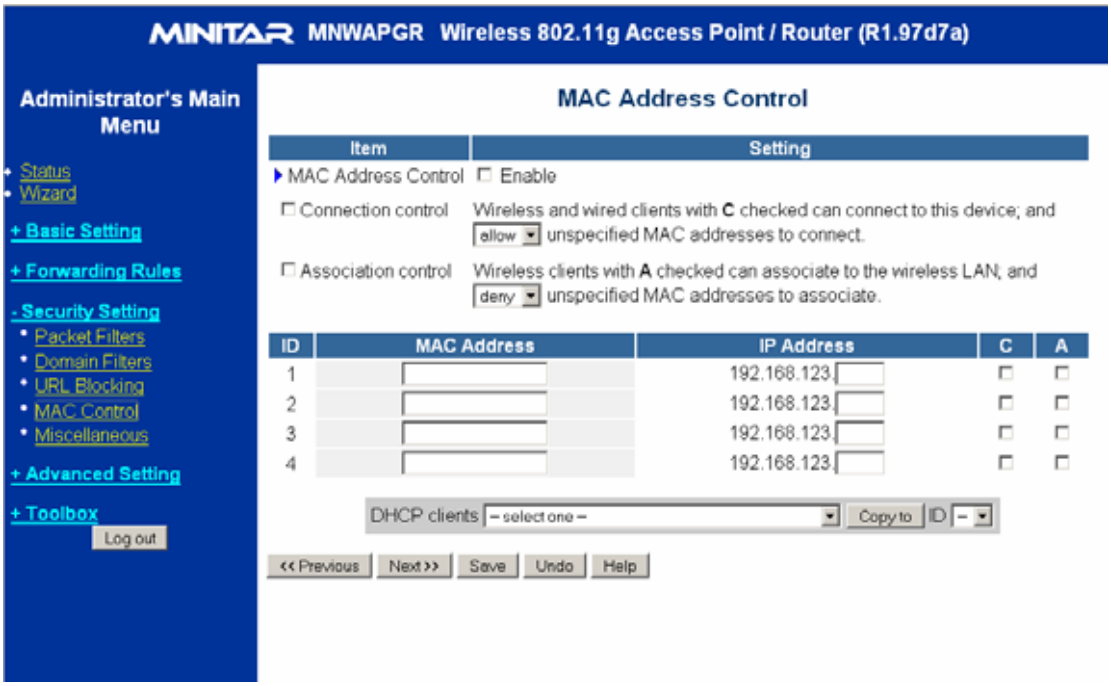
4.6.4 MAC Address Control



MAC Address Control allows you to assign different access right for different users and to assign a specific IP address to a certain MAC address.

MAC Address Control Check “Enable” to enable the “MAC Address Control”. All of the settings in this page will take effect only when “Enable” is checked.

Connection control Check "Connection control" to enable the controlling of which wired and wireless clients can connect to this device. If a client is denied connection to this device, it means the client can't access the Internet either. Choose "allow" or "deny" to allow or deny the clients whose MAC addresses are not in the "Control table" (please see below).

Association control Check "Association control" to enable the controlling of which wireless client can associate to the wireless LAN. If a client is denied association to the wireless LAN, it means the client can't send or receive any data via this device. Choose "allow" or "deny" to allow or deny the clients, whose MAC addresses are not in the "Control table".

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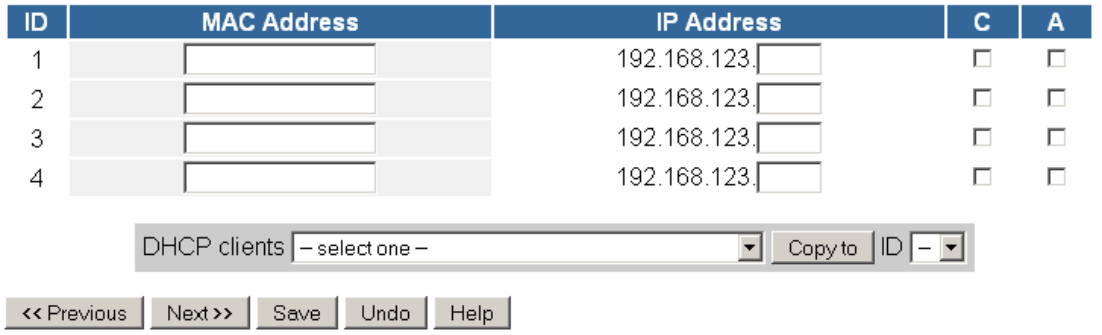
Control table



The "Control table" is the table at the bottom of the "MAC Address Control" page. Each row of this table indicates the MAC address and the expected IP address mapping of a client. There are four columns in this table:

MAC Address	MAC address indicates a specific client.
IP Address	Expected IP address of the corresponding client. Keep it empty if you don't care its IP address.
C	When "**Connection control**" is checked, check "**C**" will allow the corresponding client to connect to this device.
A	When "**Association control**" is checked, check "**A**" will allow the corresponding client to associate to the wireless LAN.

In this page, we provide the following Combo box and button to help you to input the MAC address.

You can select a specific client in the “DHCP clients” combo box, and then click on the “Copy to” button to copy the MAC address of the client you select to the ID selected in the “ID” combo box.

Previous page and Next Page To make this setup page simple and clear, we have divided the “Control table” into several pages. You can use these buttons to navigate to different pages.

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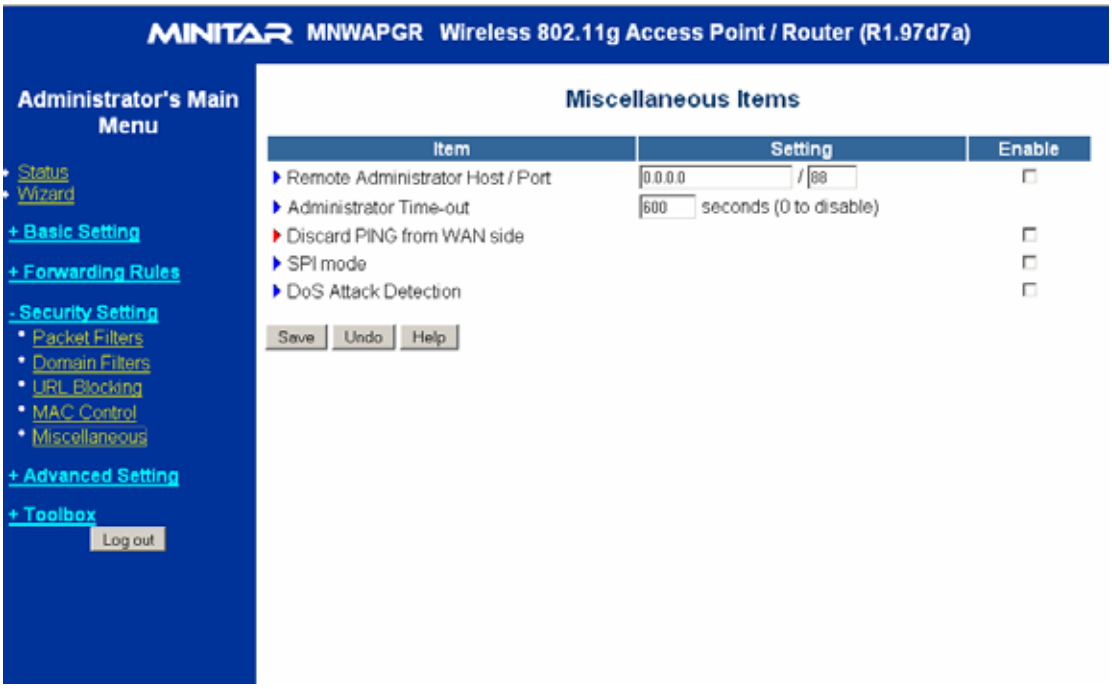
4.6.5 Miscellaneous Items



Remote Administrator Host/Port

In general, only Intranet users can browse the built-in web pages to perform administration tasks. This feature enables you to perform administration tasks from a remote host. If this feature is enabled, only the specified IP address can perform remote administration. If the specified IP address is 0.0.0.0, any host can connect to this product to perform administration tasks. You can use subnet mask bits "/nn" notation to specified a group of trusted IP addresses. For example, "10.1.2.0/24".

NOTE: When Remote Administration is enabled, the web server port will be shifted to port 88. You can change the web server port to any other port as well.

Administrator Time-out

The time of no activity to logout automatically. Set it to zero to disable this feature.

Discard PING from WAN side

When this feature is enabled, any host on the WAN cannot ping this product.

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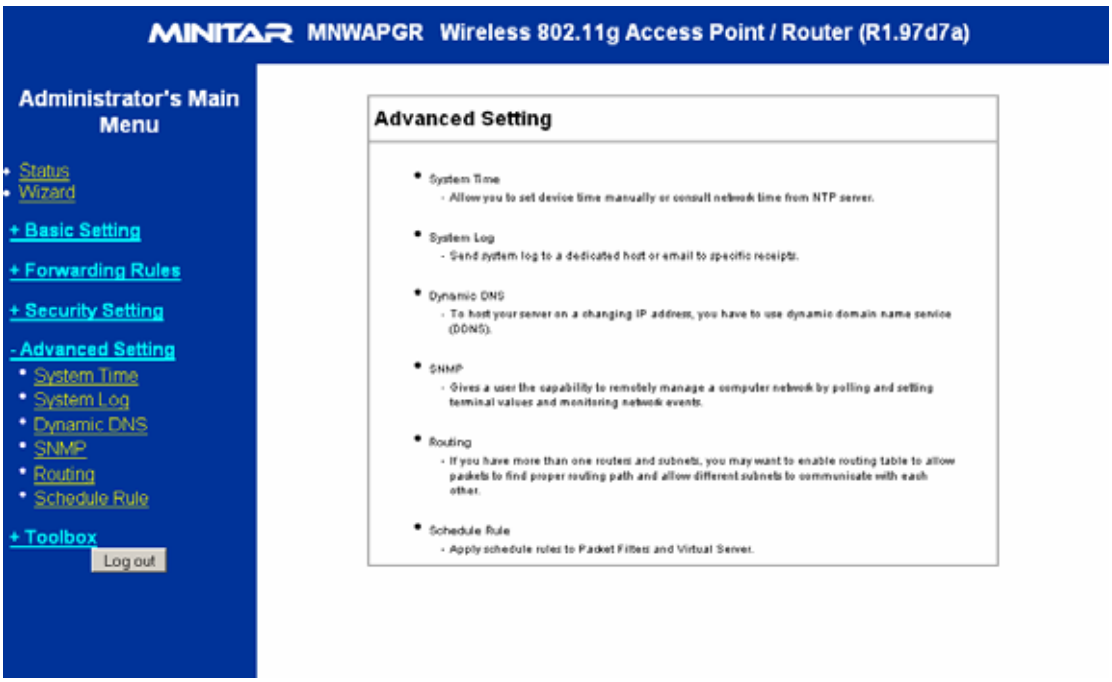
4.7 Advanced Settings


MINITAR MNWAPGR Wireless 802.11g Access Point / Router (R1.97d7a)
Administrator's Main Menu
Status
Wizard
+ Basic Setting
+ Forwarding Rules
+ Security Setting
- Advanced Setting
System Time
System Log
Dynamic DNS
SNMP
Routing
Schedule Rule
+ Toolbox
Log out
Advanced Setting
System Time
Allow you to set device time manually or consult network time from NTP server.
System Log
Send system log to a dedicated host or email to specific receipts.
Dynamic DNS
To host your server on a changing IP address, you have to use dynamic domain name service (DDNS).
SNMP
Gives a user the capability to remotely manage a computer network by polling and setting terminal values and monitoring network events.
Routing
If you have more than one routers and subnets, you may want to enable routing table to allow packets to find proper routing path and allow different subnets to communicate with each other.
Schedule Rule
Apply schedule rules to Packet Filters and Virtual Server.

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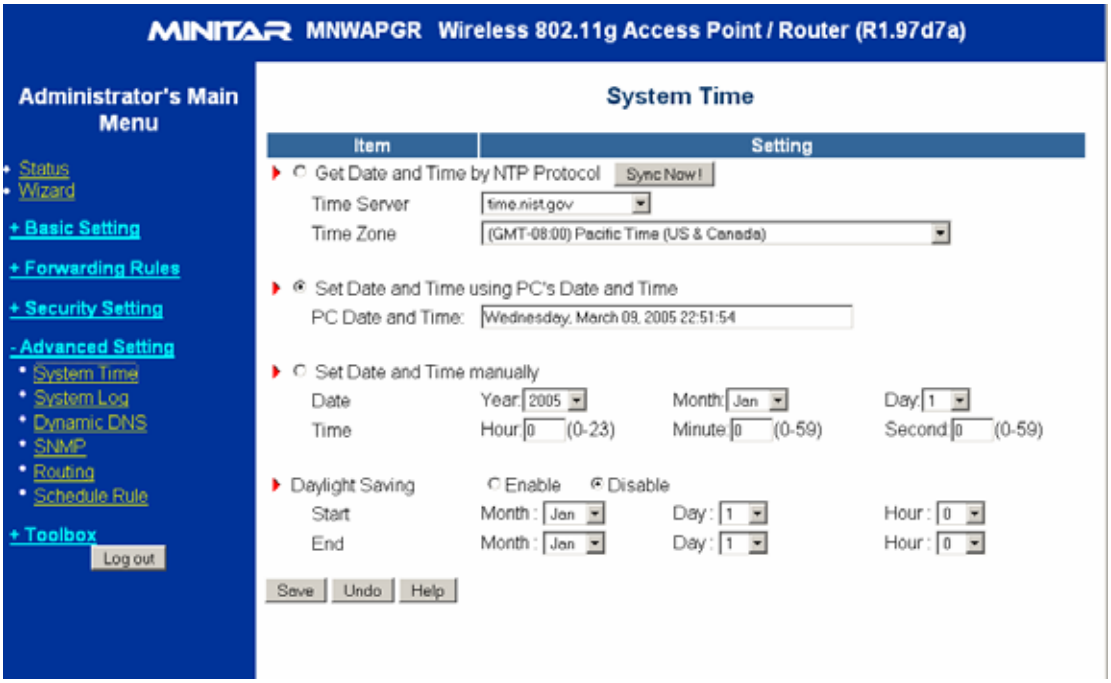
4.7.1 System Time



Get Date and Time by NTP Protocol

Selected if you want to Get the Date and Time by the NTP Protocol.

Time Server

Select a NTP time server to consult UTC time

Time Zone

Select a time zone where this device resides.

Set Date and Time manually

Select if you want to set the Date and Time manually.

Function of Buttons

Sync Now: Synchronize the system time with the network time server

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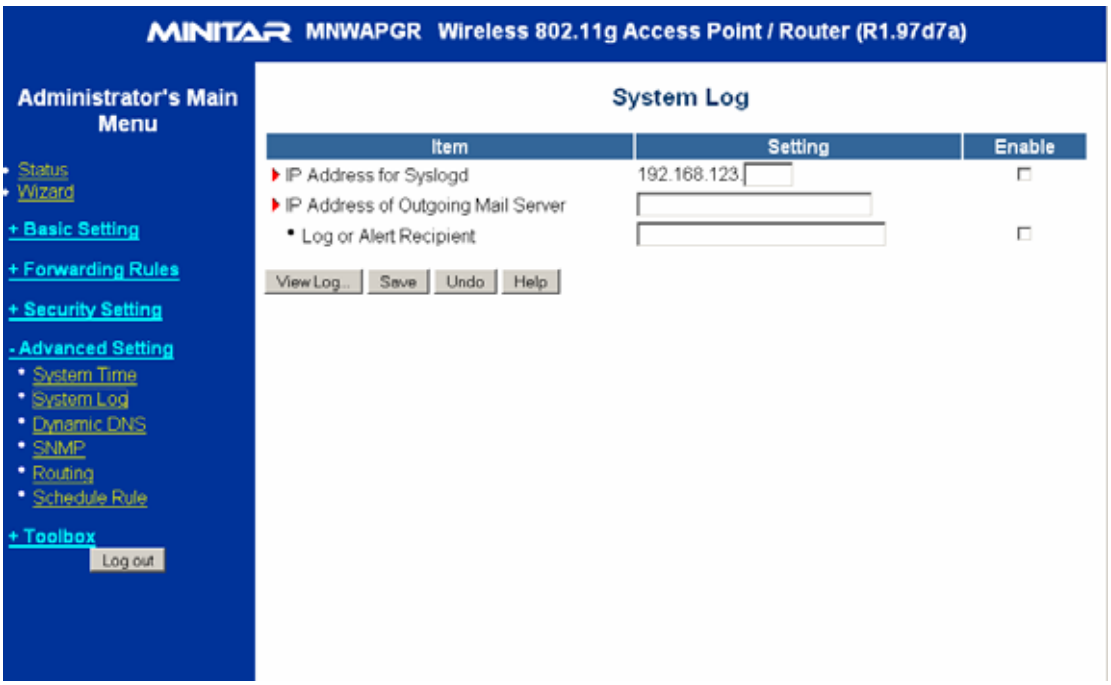
4.7.2 System Log



This page supports two methods to export system logs to specific destination by means of syslog(UDP) and SMTP(TCP). The items you have to setup include:

IP Address for Syslog

Host IP of destination where syslog entries will be sent to.

Check **Enable** to enable this function.

E-mail Alert Enable

Check if you want to enable the Email alerts (send syslog via email).

SMTP Server IP and Port

Input the SMTP server IP and port, which are concatenated with ':'. If you do not specify a port number, the default value is 25.

For example, "mail.your_url.com" or "192.168.1.100:26".

Send E-mail alert to

The recipients who will receive these logs. You can assign more than 1 recipient, using ';' or ',' to separate these email addresses.

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4.7.3 Dynamic DNS

To host your server on a changing IP address, you have to use a dynamic domain name service (DDNS).

So that anyone wishing to reach your host only needs to know the name of it. Dynamic DNS will map the name of your host to your current IP address, which changes each time you connect to your Internet service provider.

Before you enable **Dynamic DNS**, you need to register an account on one of these Dynamic DNS servers that we list in **provider** field.

To enable **Dynamic DNS** click the check box next to **Enable** in the **DDNS** field.

Next you can enter the appropriate information about your Dynamic DNS Server.

You have to define:

Provider

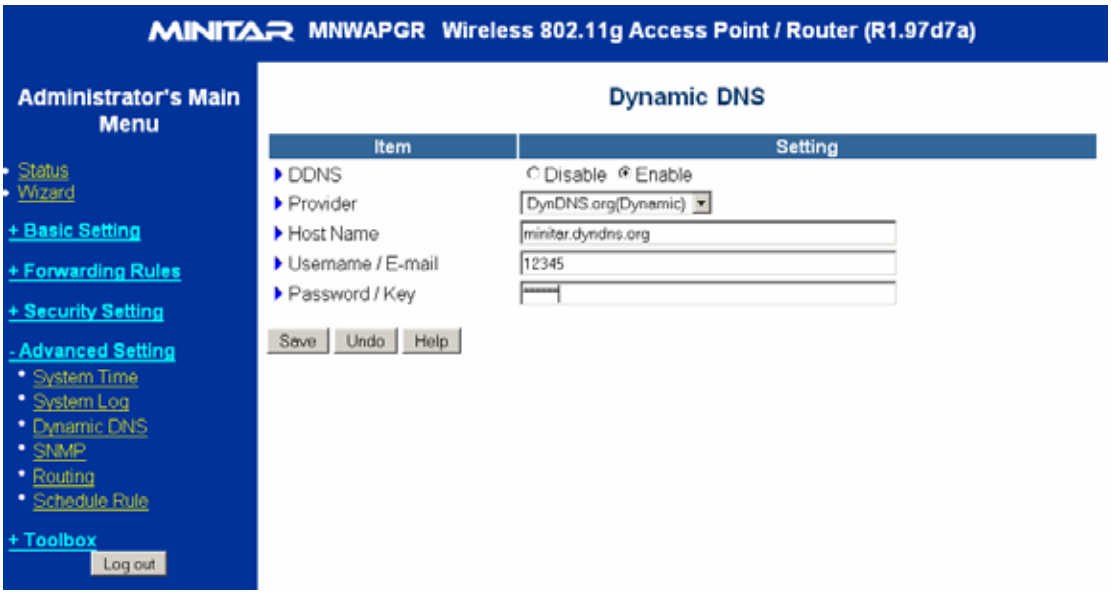
Host Name

Username/E-mail

Password/Key

You will get this information when you register an account on a Dynamic DNS server.

Example:



After the Dynamic DNS settings are configured, click the save button.

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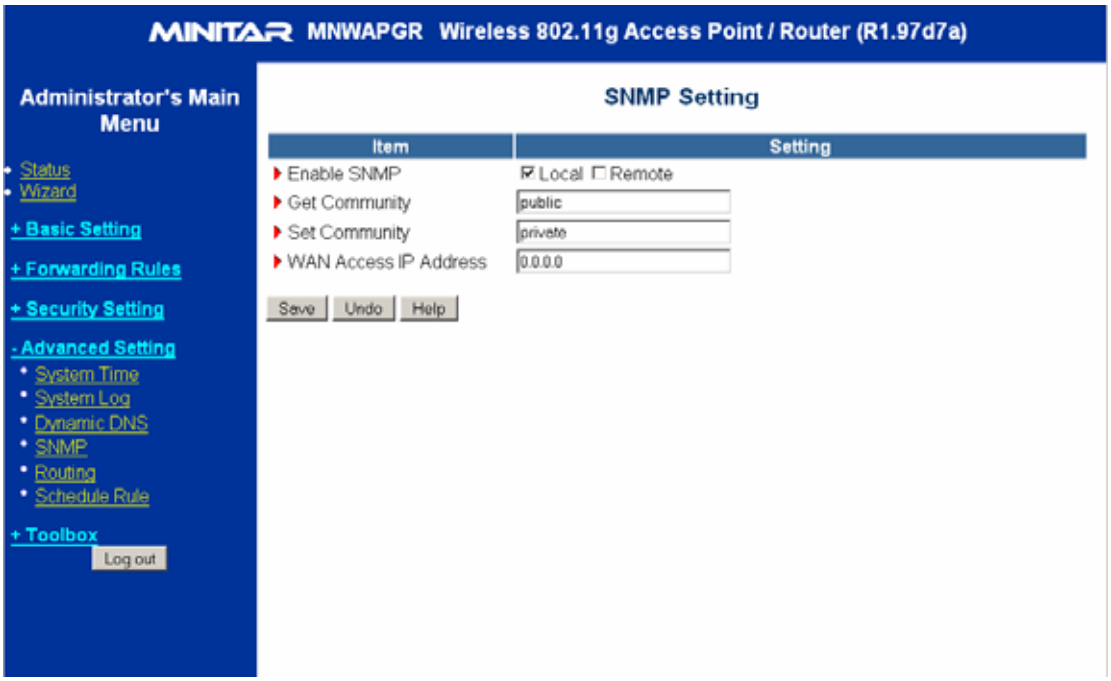
4.7.4 SNMP Setting



In brief, SNMP, the Simple Network Management Protocol, is a protocol designed to give a user the capability to remotely manage a computer network by polling and setting terminal values and monitoring network events.

Enable SNMP

You must check either Local or Remote or both to enable the SNMP function. If Local is checked, this device will respond to requests from the LAN. If Remote is checked, this device will respond to requests from the WAN.

Get Community

Setting the community of GetRequest your device will respond to.

Set Community

Setting the community of SetRequest your device will accept.

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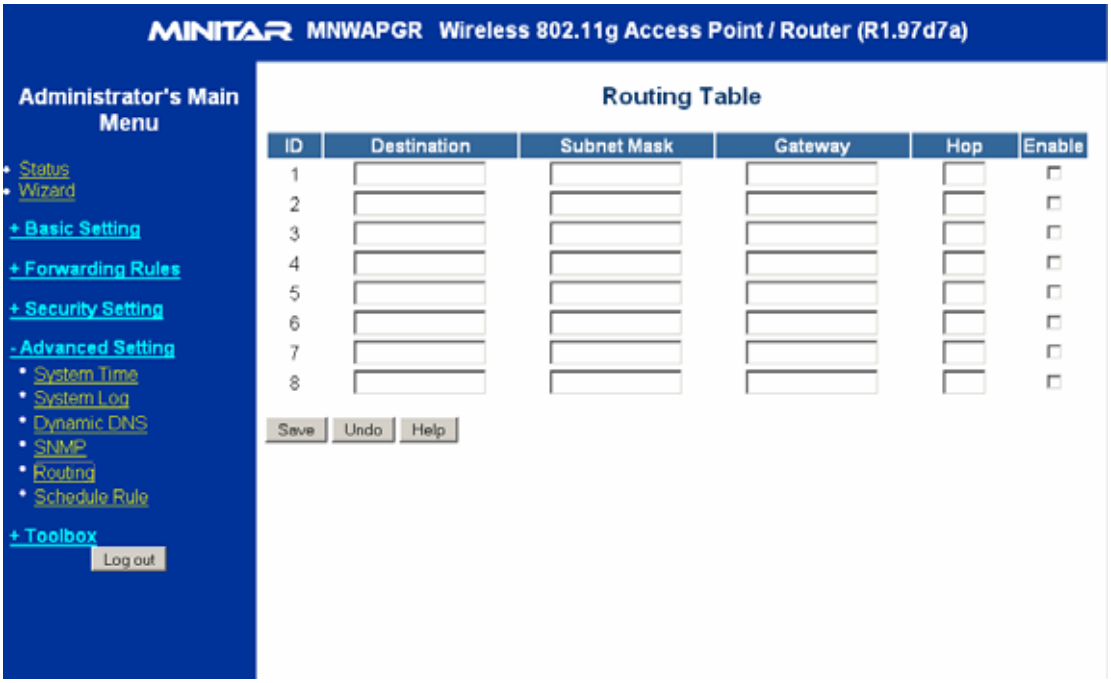
4.7.5 Routing Table



Routing Tables allow you to determine which physical interface address to use for outgoing IP data packets. If you have more than one router and subnets, you will need to enable the routing table to allow packets to find the proper routing path and allow different subnets to communicate with each other.

The Routing Table settings are settings used to setup the functions of static routing.

Static Routing: For static routing, you can specify up to 8 routing rules. You can enter the destination IP address, subnet mask, gateway and hop for each routing rule, and then enable or disable the rule by checking or unchecking the Enable checkbox.

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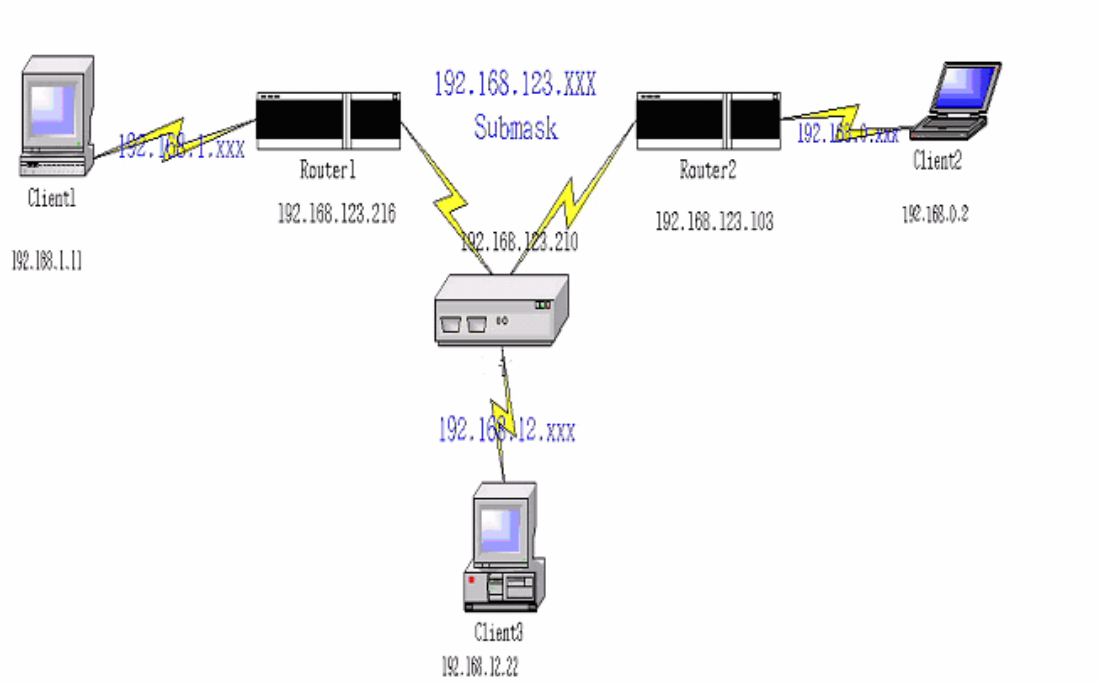
Example:



Configuration on NAT Router

Destination	SubnetMask	Gateway	Hop	Enabled
192.168.1.0	255.255.255.0	192.168.123.216	1	ˇ
192.168.0.0	255.255.255.0	192.168.123.103	1	ˇ

So if, for example, the client3 wanted to send an IP data packet to 192.168.0.2, it would use the above table to determine that it had to go via 192.168.123.103 (a gateway),

And if it sends Packets to 192.168.1.11 they will go via 192.168.123.216

Each rule can be enabled or disabled individually.

After the **routing table** settings are configured, click the **save** button.

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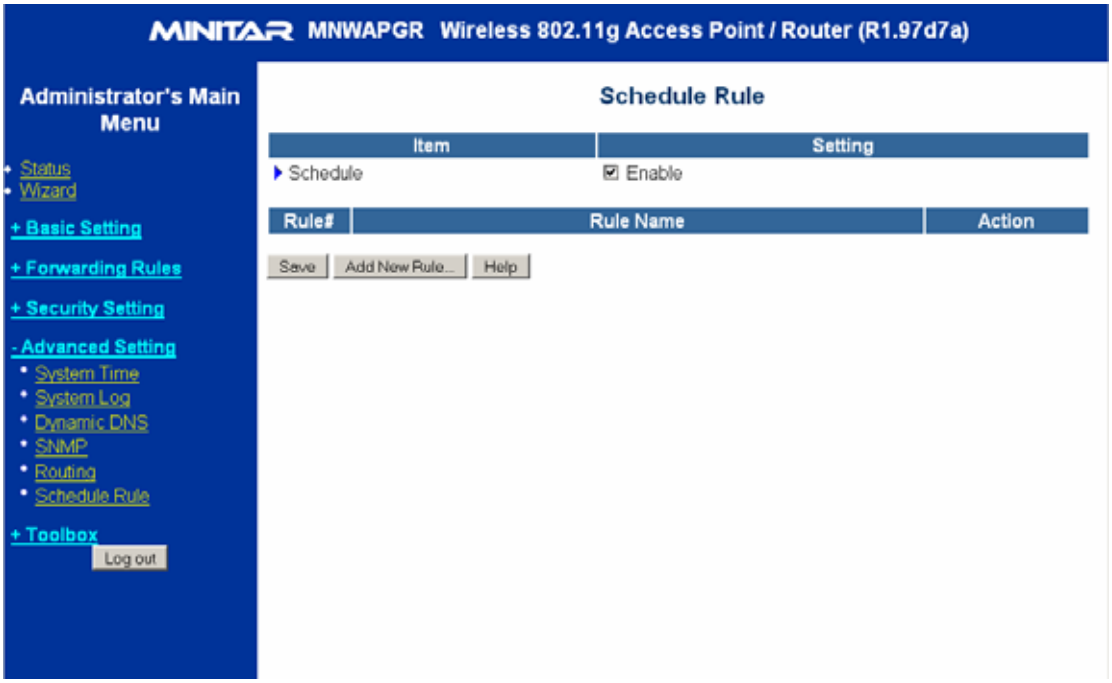
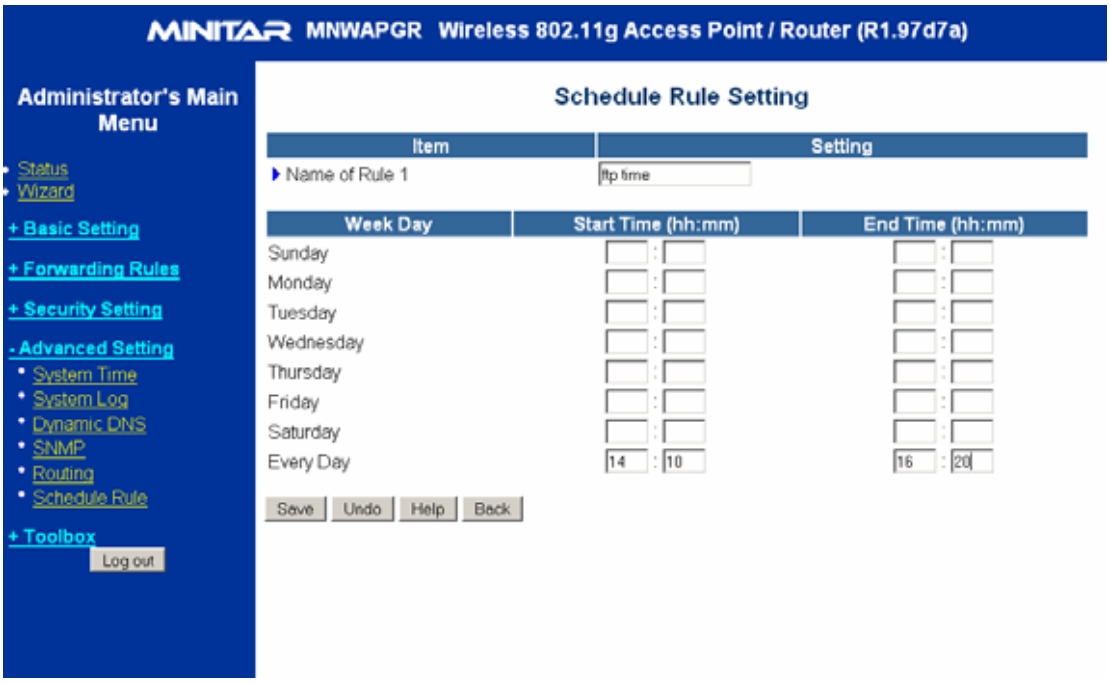
4.7.6 Schedule Rule



You can set the schedule time to decide which service will be turned on or off at that time. Select the “enable” item.

Press **“Add New Rule”**

You can write a rule name and set which day and what time to schedule from “Start Time” to “End Time”. The following example configures “ftp time” as everyday 14:10 to 16:20



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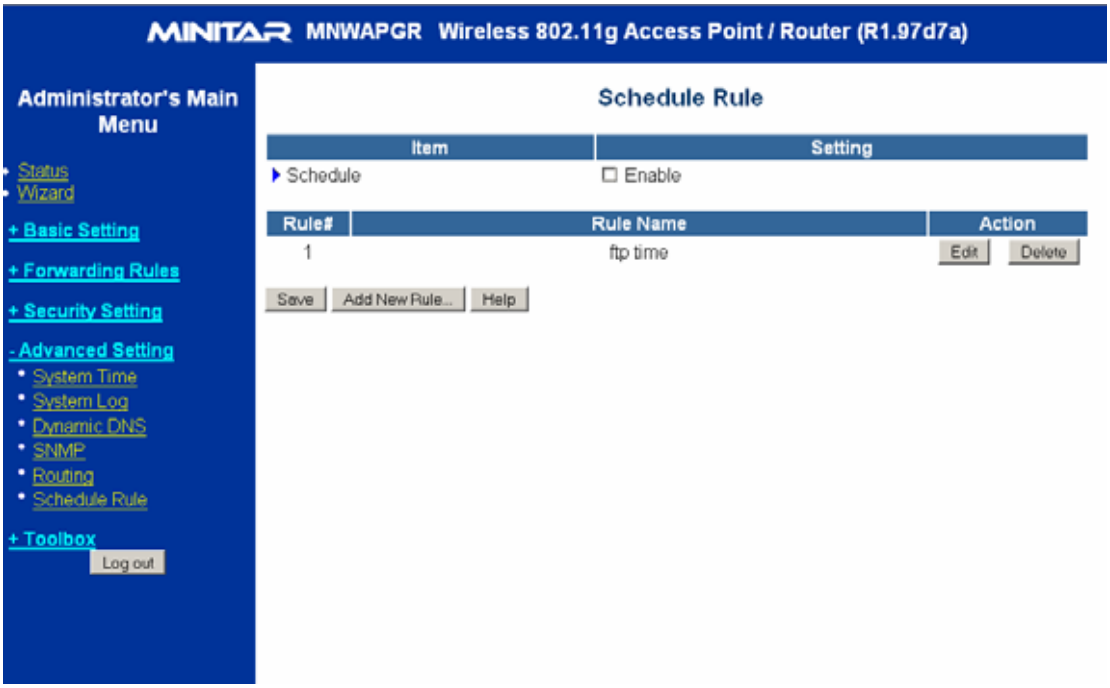
After configure Rule 1→



Schedule Enable

Selected if you want to Enable the Scheduler.

Edit

To edit the schedule rule.

Delete

To delete the schedule rule, and the rule# of the rules behind the deleted one will decrease one automatically.

A Schedule Rule can be applied to a Virtual server and Packet Filter, for example:

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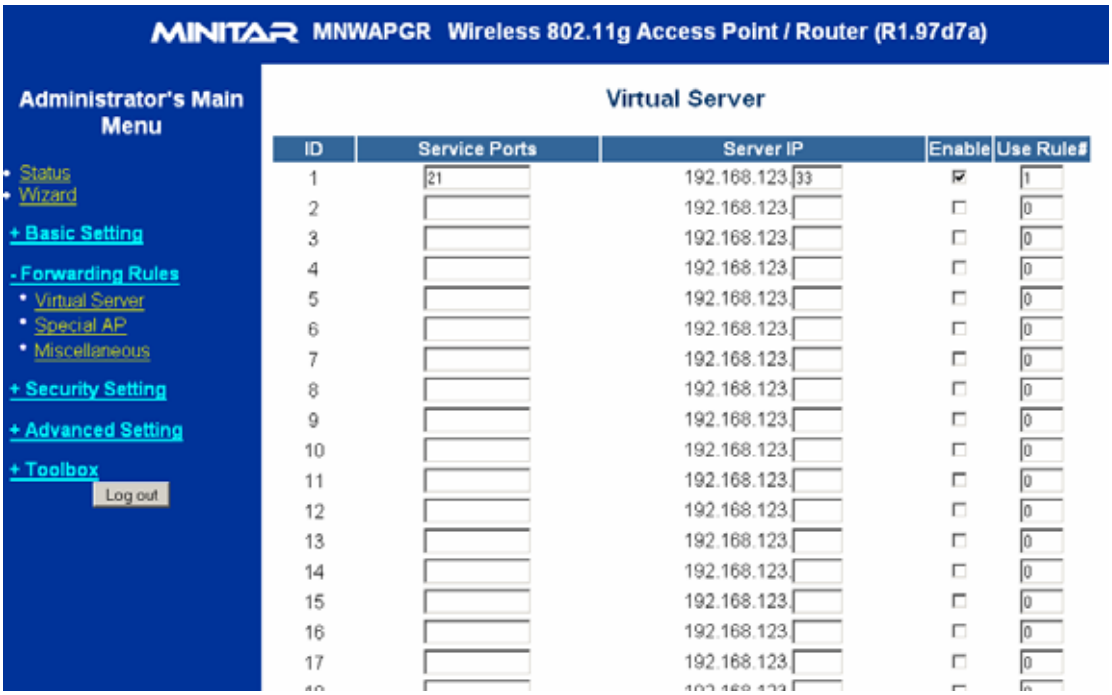
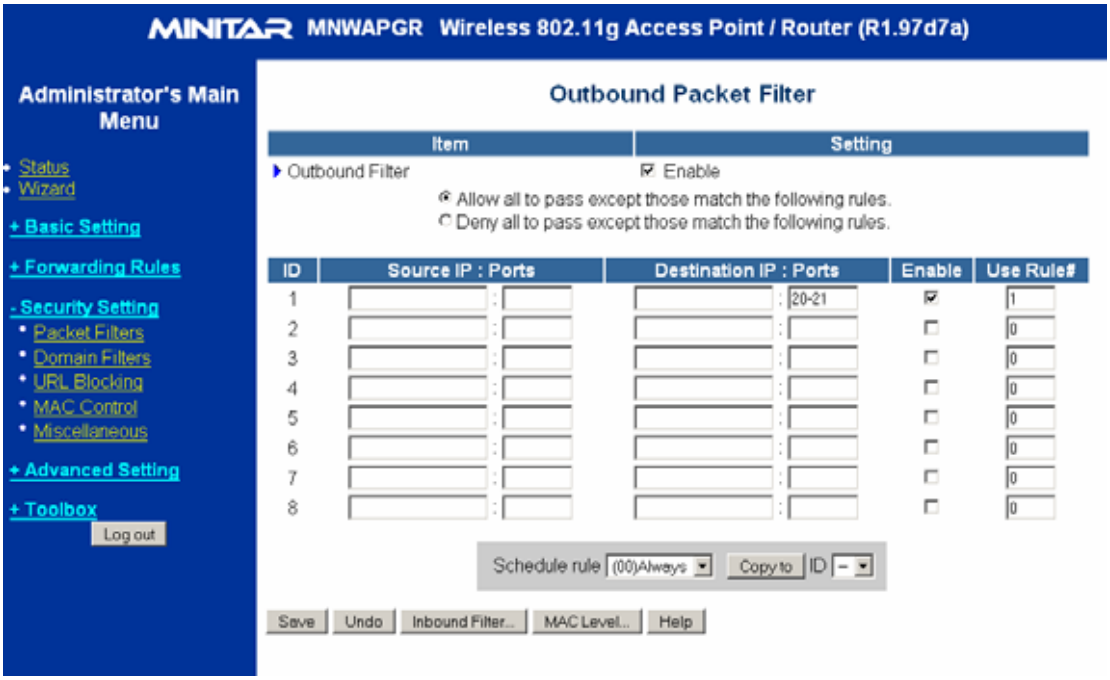
Example1: **Virtual Server** – Apply Rule #1 (ftp time: everyday 14:10 to 16:20)



Example2: **Packet Filter** – Apply Rule#1 (ftp time: everyday 14:10 to 16:20).



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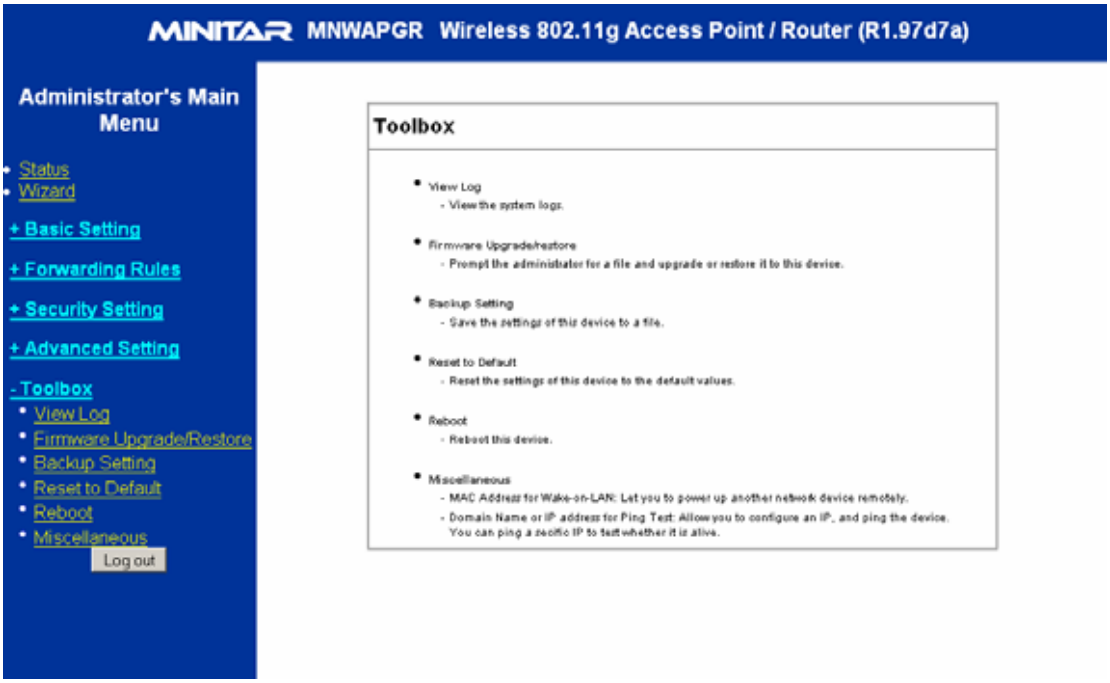
4.8 Toolbox


MINITAR MNWAPGR Wireless 802.11g Access Point / Router (R1.97d7a)
Administrator's Main Menu
Status
Wizard
+ Basic Setting
+ Forwarding Rules
+ Security Setting
+ Advanced Setting
- Toolbox
View Log
Firmware Upgrade/Restore
Backup Setting
Reset to Default
Reboot
Miscellaneous
Log out
Toolbox
View Log
- View the system logs.
Firmware Upgrade/restore
- Prompt the administrator for a file and upgrade or restore it to this device.
Backup Setting
- Save the settings of this device to a file.
Reset to Default
- Reset the settings of this device to the default values.
Reboot
- Reboot this device.
Miscellaneous
- MAC Address for Wake-on-LAN: Let you to power up another network device remotely.
- Domain Name or IP address for Ping Test: Allow you to configure an IP, and ping the device. You can ping a specific IP to test whether it is alive.

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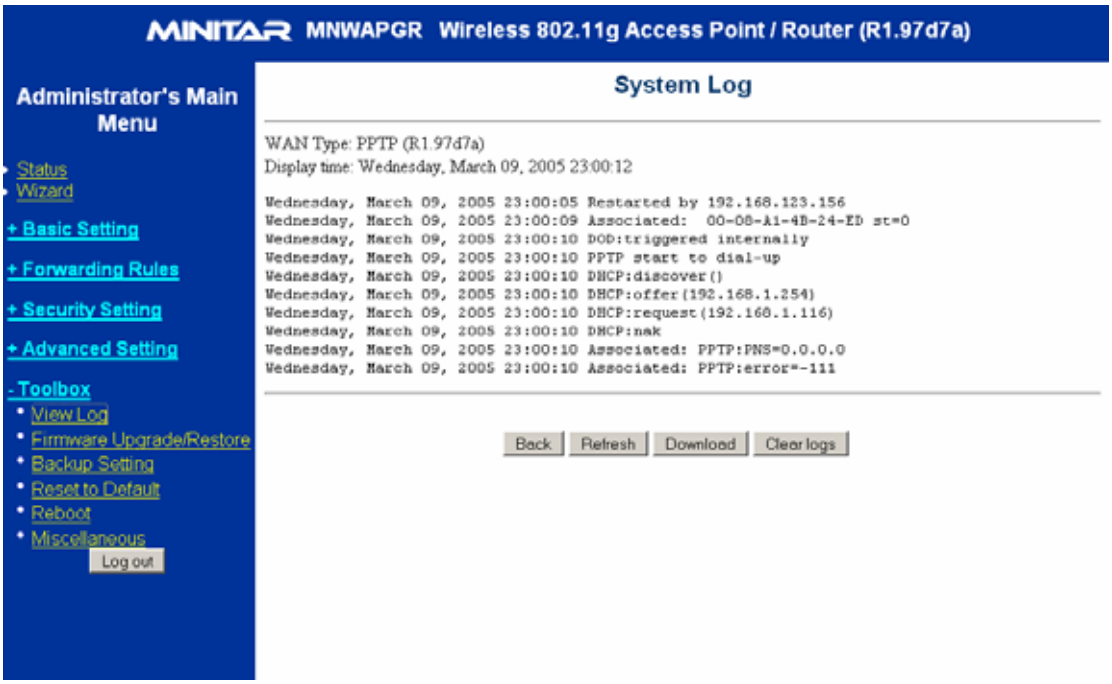
4.8.1 System Log



You can View the system log by clicking the **View Log** button

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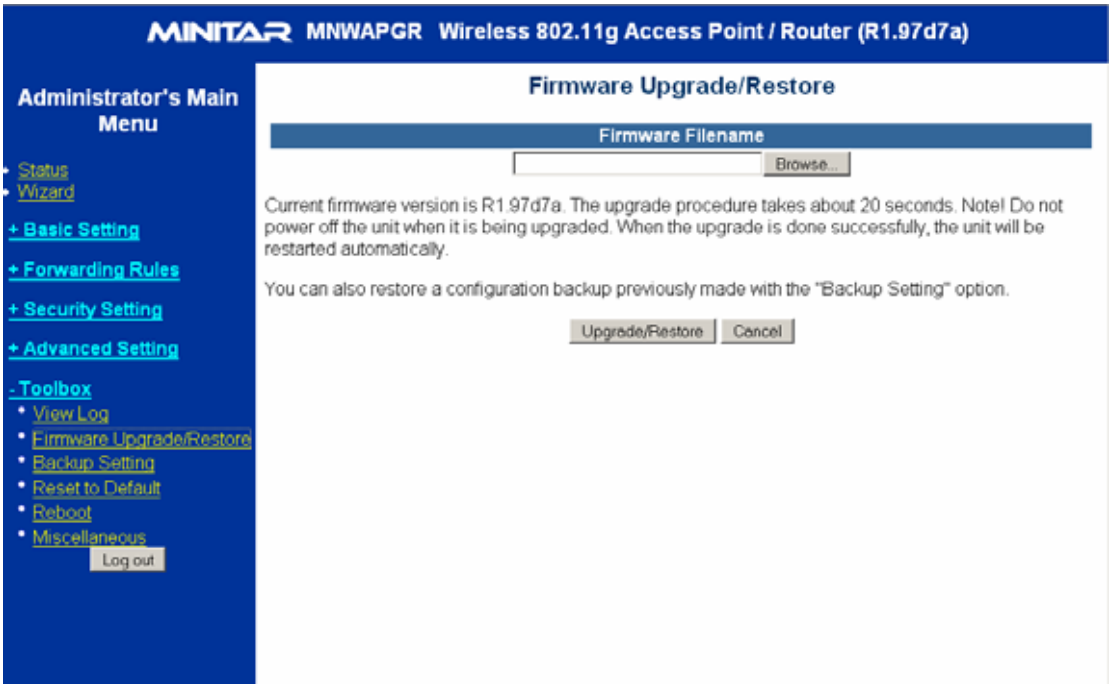
4.8.2 Firmware Upgrade


MINITAR MNWAPGR Wireless 802.11g Access Point / Router (R1.97d7a)
Administrator's Main Menu
Status
Wizard
+ Basic Setting
+ Forwarding Rules
+ Security Setting
+ Advanced Setting
- Toolbox
View Log
Firmware Upgrade/Restore
Backup Setting
Reset to Default
Reboot
Miscellaneous
Log out
Firmware Upgrade/Restore
Firmware Filename
Browse...
Current firmware version is R1.97d7a. The upgrade procedure takes about 20 seconds. Note! Do not power off the unit when it is being upgraded. When the upgrade is done successfully, the unit will be restarted automatically.
You can also restore a configuration backup previously made with the "Backup Setting" option.
Upgrade/Restore
Cancel

You can upgrade the firmware by clicking the **Firmware Upgrade** button.

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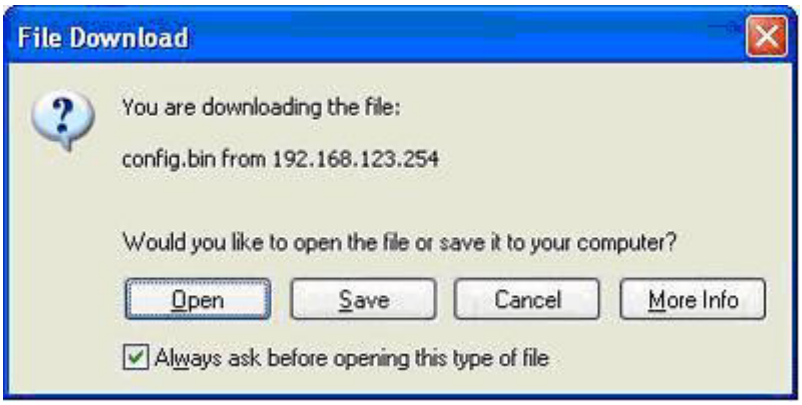
4.8.3 Backup Setting


File Download
You are downloading the file:
config.bin from 192.168.123.254
Would you like to open the file or save it to your computer?
Open
Save
Cancel
More Info
Always ask before opening this type of file

You can backup your settings by clicking the **Backup Setting** button and saving it as a bin file. Once you want to restore these settings, please click **Firmware Upgrade** button and use the bin file you saved.

4.8.4 Reset to default

You can also reset this product to factory default settings by clicking the **Reset to default** button.

4.8.5 Reboot

You can also reboot this product by clicking the **Reboot** button.

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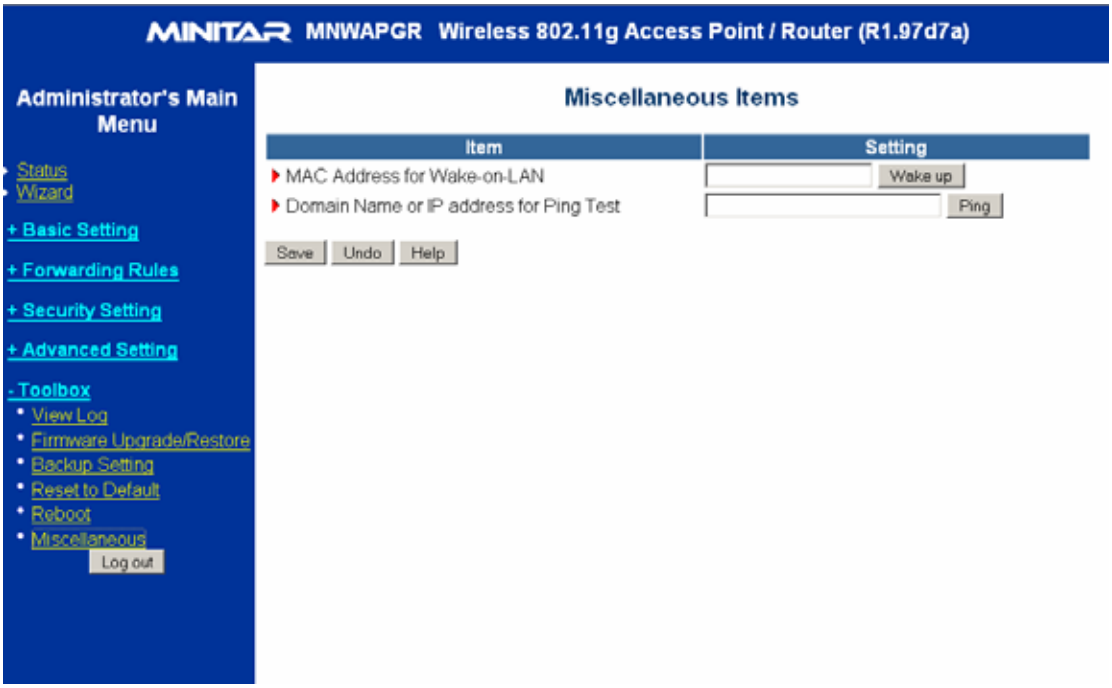
4.8.6 Miscellaneous Items



MAC Address for Wake-on-LAN

Wake-on-LAN is a technology that enables you to power up a networked device remotely. In order to enjoy this feature, the target device must be Wake-on-LAN enabled and you have to know the MAC address of this device, say 00-11-22-33-44-55. Clicking "Wake up" button will make the router send the wake-up frame to the target device immediately.

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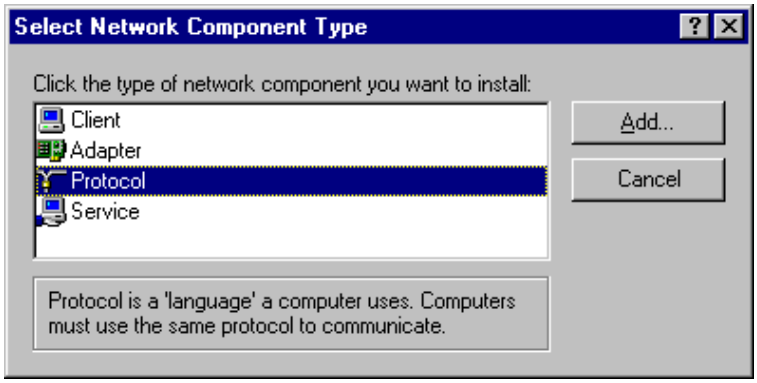
Appendix A TCP/IP Configuration for Windows 95/98

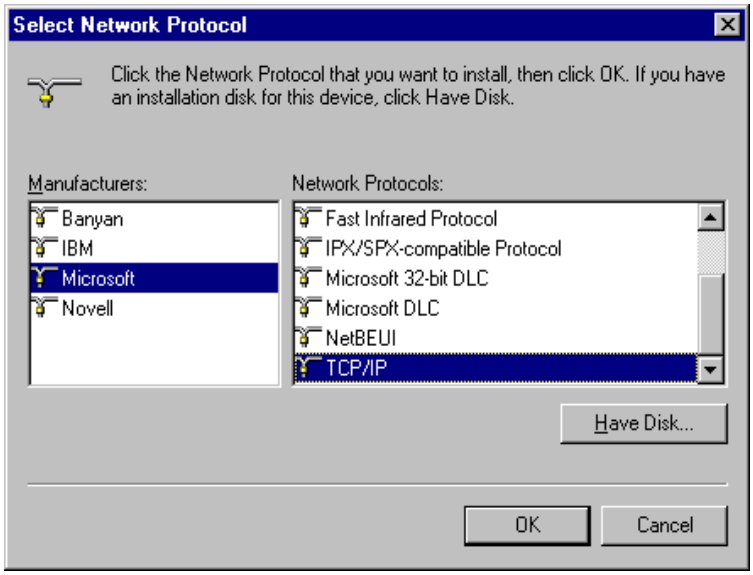
This section introduces you how to install the TCP/IP protocol into your personal computer. And suppose you have successfully installed one network card on your personal computer. If not, please refer to your network card manual. Moreover, the Section A.2 tells you how to set TCP/IP values for working with this NAT Router correctly.

A.1 Install TCP/IP Protocol into Your PC

1. Click **Start** button and choose **Settings**, then click **Control Panel**.
2. Double click the **Network** icon and select the **Configuration** tab in the Network window.
3. Click the **Add** button to add a network component into your PC.
4. Double click the **Protocol** to add the TCP/IP protocol.



5. Select the **Microsoft** item in the manufactures list. And choose **TCP/IP** in the Network Protocols. Click **OK** button to return to Network window.



6. The TCP/IP protocol shall be listed in the Network window. Click **OK** to complete the install procedure and restart your PC to enable the TCP/IP protocol.

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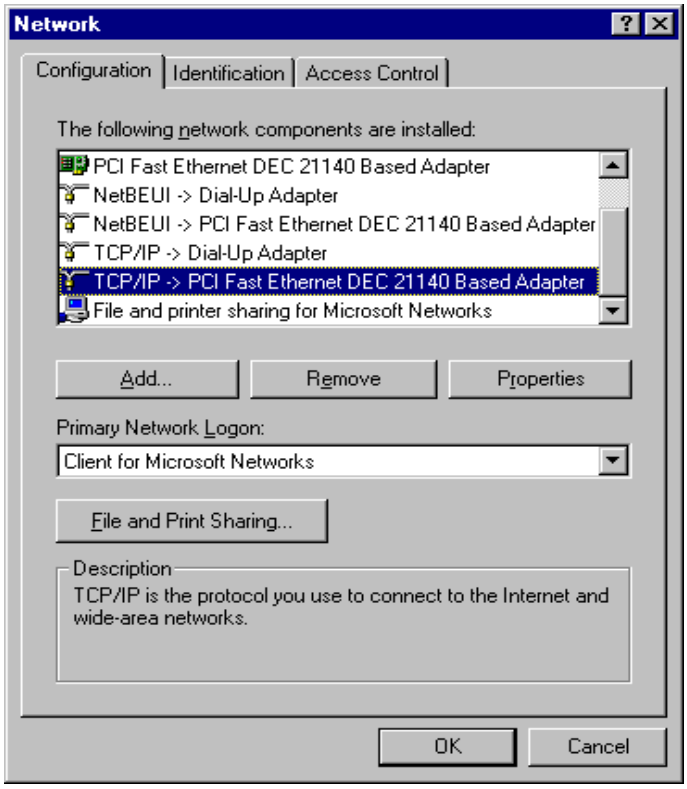
A.2 Set TCP/IP Protocol for Working with NAT Router

1. Click the **Start** button and choose **Settings**, then click **Control Panel**.
2. Double click the **Network** icon. Select the TCP/IP line that has been associated to your network card in the **Configuration** tab of the Network window.



3. Click the **Properties** button to set the TCP/IP protocol for this NAT Router.
4. Now, you have two configuration methods:

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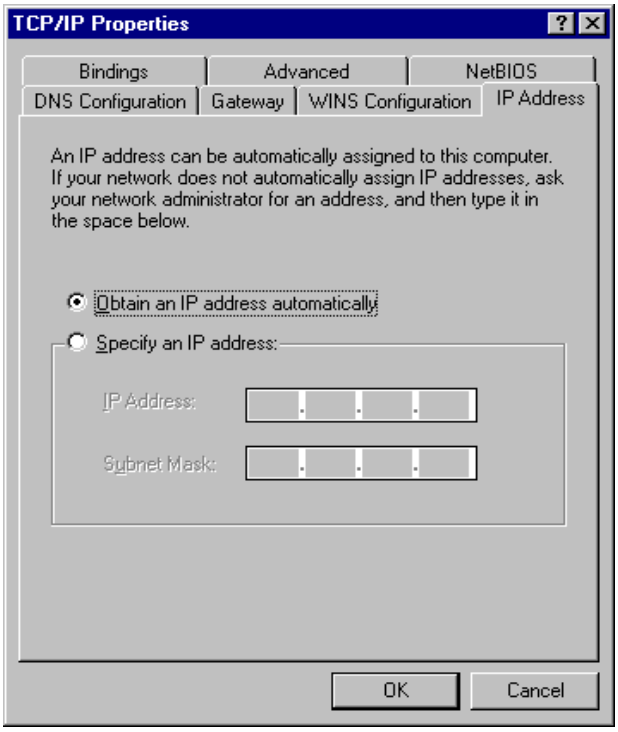
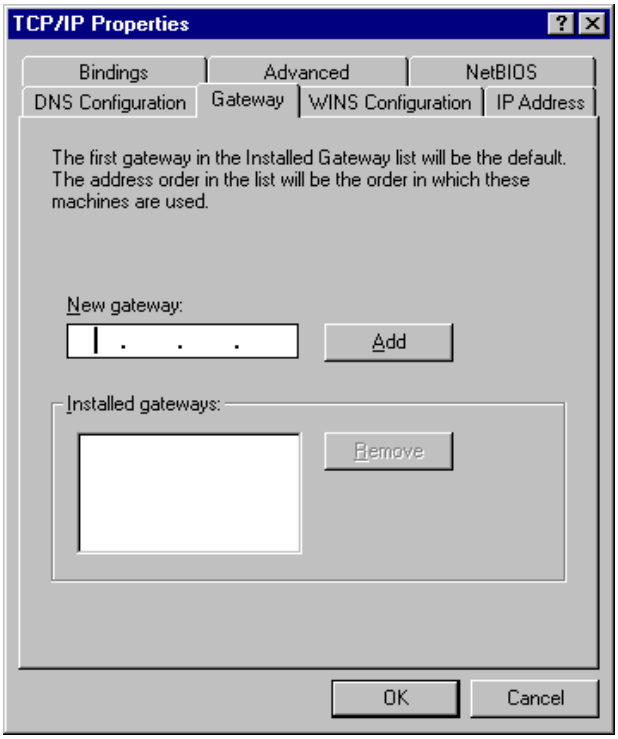
a. Select **Obtain an IP address automatically** in the IP Address tab.


TCP/IP Properties
Bindings
Advanced
NetBIOS
DNS Configuration
Gateway
WINS Configuration
IP Address
An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.
Obtain an IP address automatically
Specify an IP address:
IP Address:
Subnet Mask:
OK
Cancel

b. Don't input any value in the Gateway tab.



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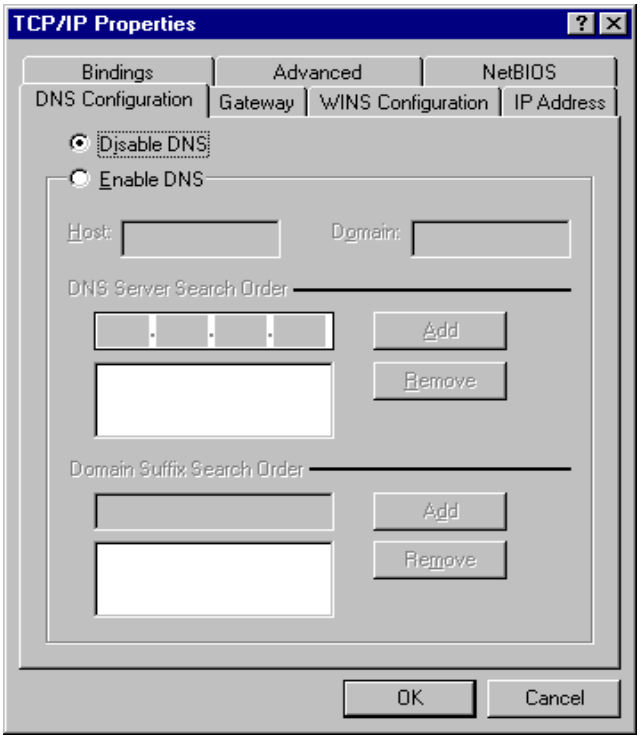
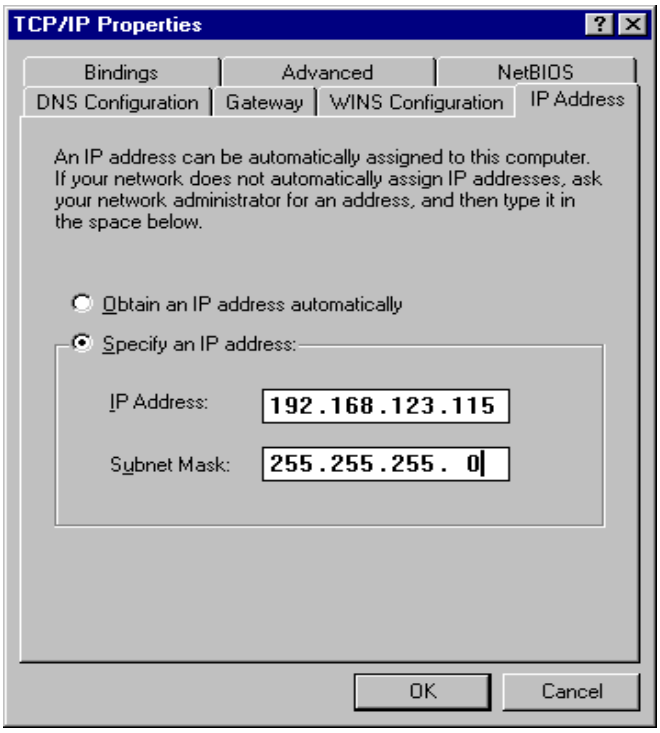
c. Choose **Disable DNS** in the DNS Configuration tab.



B. Configure IP manually

a. Select **Specify an IP address** in the IP Address tab. The default IP address of this product is 192.168.123.254. So please use 192.168.123.xxx (xxx is between 1 and 253) for IP Address field and 255.255.255.0 for Subnet Mask field.



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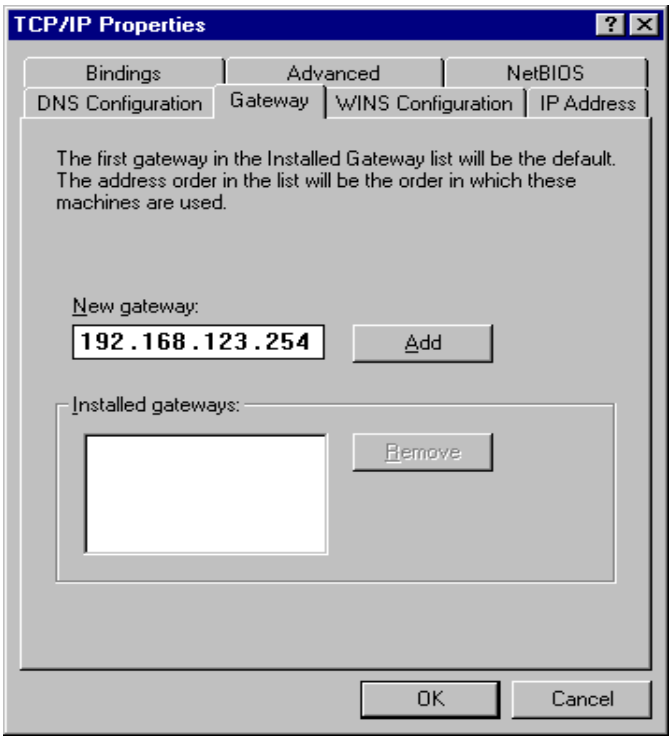
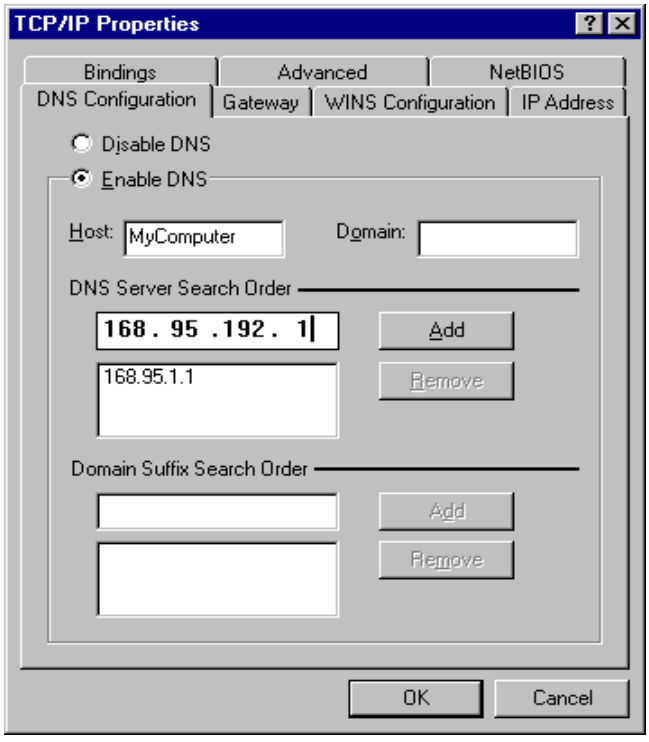
b. In the Gateway tab, add the IP address of this product (default IP is 192.168.123.254) in the New gateway field and click **Add** button.



c. In the DNS Configuration tab, add the DNS values which are provided by your ISP into the DNS Server Search Order field and click the **Add** button.



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Appendix B 802.1x Setting

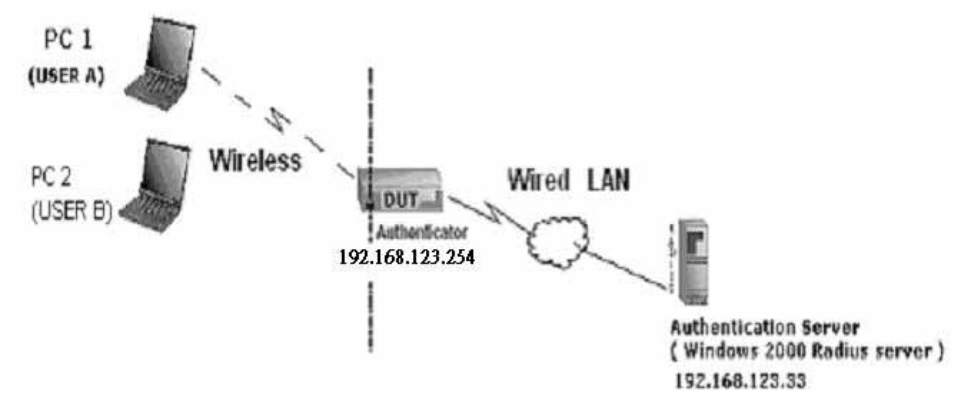

Figure 1: Testing Environment (using the Windows 2000 Radius Server)

1 Equipment Details

PC1:

Microsoft Windows XP Professional without Service Pack 1.

D-Link DWL-650+ wireless LAN adapter

Driver version: 3.0.5.0 (Driver date: 03.05.2003)

PC2:

Microsoft Windows XP Professional with Service Pack 1a.

Z-Com XI-725 wireless LAN USB adapter

Driver version: 1.7.29.0 (Driver date: 10.20.2001)

Authentication Server: Windows 2000 RADIUS server with Service Pack 3 and HotFix Q313664.

Note. Windows 2000 RADIUS server only supports the PEAP protocol after a upgrade to service pack 3 and HotFix Q313664 *(You can get more information from http://support.microsoft.com/default.aspx?scid=kb; en-us;313664)*

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2 DUT Configuration:

1.Enable DHCP server.

2.WAN setting: static IP address.

3.LAN IP address: 192.168.123.254/24.

4.Set RADIUS server IP.

5.Set RADIUS server shared key.

6.Configure WEP key and 802.1X setting.

The following test will use the inbuilt 802.1X authentication method such as ,EAP_TLS, PEAP_CHAPv2(Windows XP with SP1 only), and PEAP_TLS(Windows XP with SP1 only) using a Smart Card or other Certificate function of the Windows XP Professional.

3. DUT and Windows 2000 Radius Server Setup

3-1-1. Setup Windows 2000 RADIUS Server

We have to change the authentication method to MD5_Challenge or using smart card or other certificate on RADIUS server according to the test condition.

3-1-2. Setup DUT

1. Enable the 802.1X (check the “Enable checkbox“).
2. Enter the RADIUS server IP.
3. Enter the shared key. (The key shared by the RADIUS server and DUT).
4. We will change 802.1X encryption key length to fit the variable test condition.

3-1-3. Setup Network adapter on PC

1. Choose the IEEE802.1X as the authentication method. (Fig 2)

   Note.

   Figure 2 is a setting picture of Windows XP without service pack 1. If users upgrade to service pack 1, then they can’t see MD5-Challenge from EAP type list any more, but they will get a new Protected EAP (PEAP) option.
2. Choose MD5-Challenge or Smart Card or other Certificate as the EAP type.
3. If choosing to use smart card or the certificate as the EAP type, we select to use a certificate on this computer. (Fig 3)
4. We will change EAP type to fit the variable test condition.

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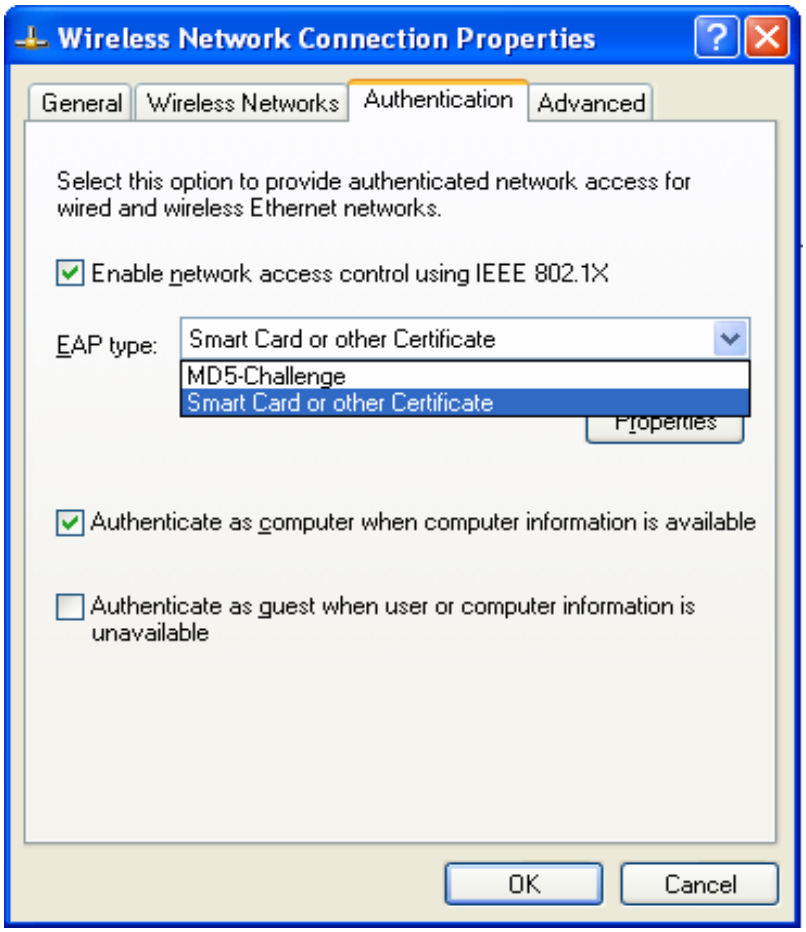
Wireless Network Connection Properties
General
Wireless Networks
Authentication
Advanced
Select this option to provide authenticated network access for wired and wireless Ethernet networks.
Enable network access control using IEEE 802.1X
EAP type:
Smart Card or other Certificate
MD5-Challenge
Smart Card or other Certificate
Properties
Authenticate as computer when computer information is available
Authenticate as guest when user or computer information is unavailable
OK
Cancel

Figure 2: Enable IEEE 802.1X access control

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Figure 3: Smart card or certificate properties

4. Windows 2000 RADIUS server Authentication testing:

4.1 DUT authenticate PC1 using certificate. (PC2 follows the same test procedures.)

1. Download and install the certificate on PC1. (Fig 4)
2. PC1 choose the SSID of DUT as the Access Point.
3. Set authentication type of wireless client and RADIUS server both to EAP_TLS.
4. Disable the wireless connection and enable again.
5. The DUT will send the user's certificate to the RADIUS server, and then send the message of authentication result to PC1. (Fig 5)
6. Windows XP will prompt that the authentication process is success or fail and end the authentication procedure. (Fig 6)
7. Terminate the test steps when PC1 get dynamic IP and PING remote host successfully.

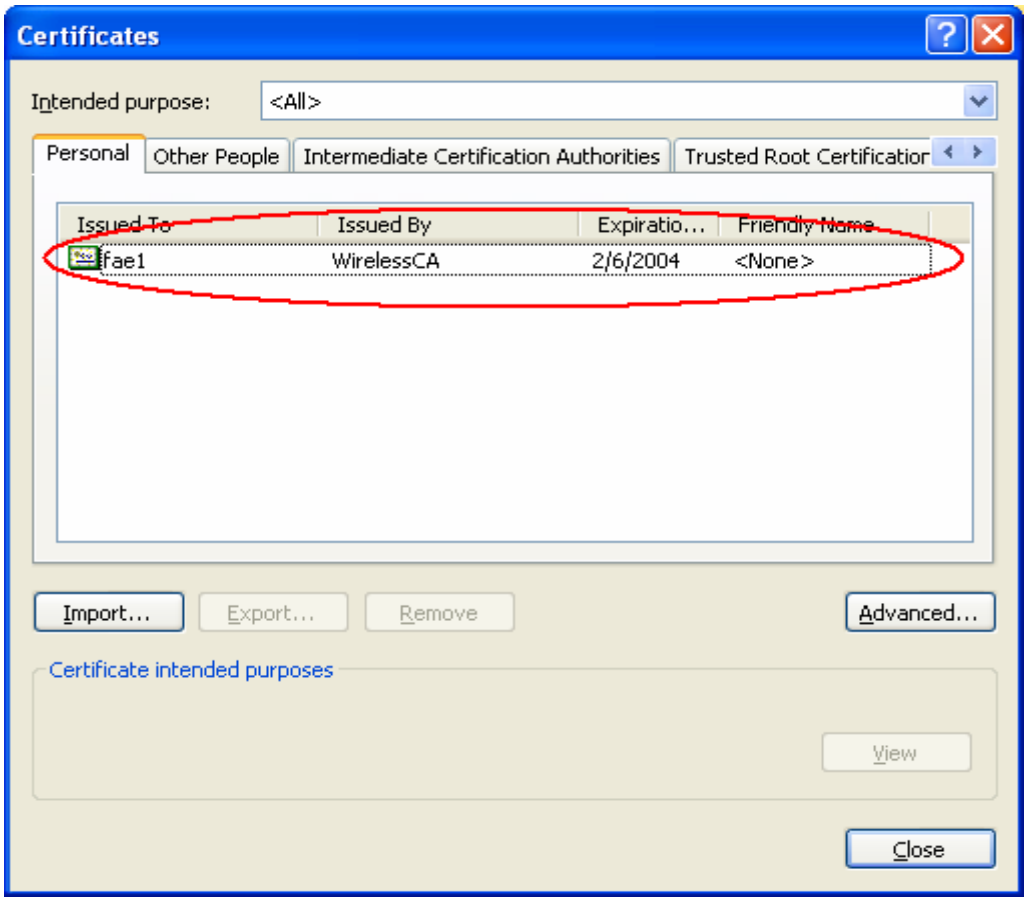

Figure 4: Certificate information on PC1

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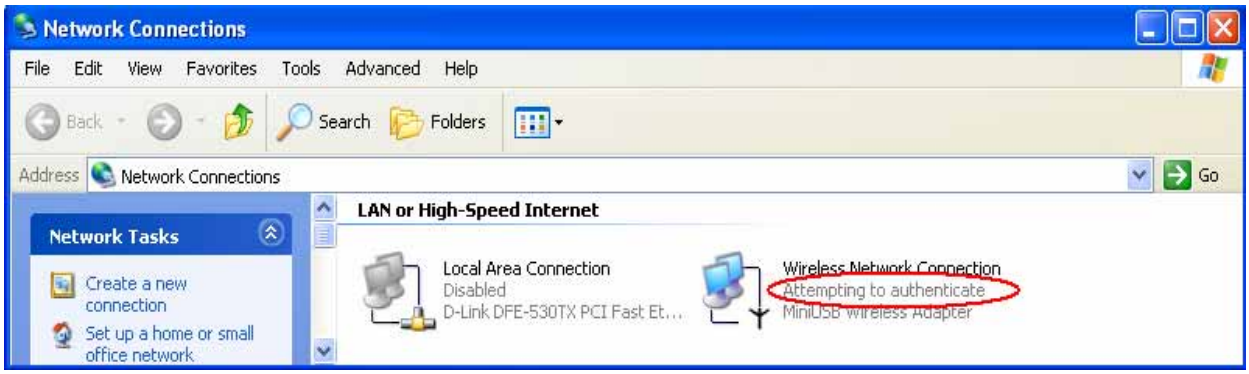

Figure 5: Authenticating

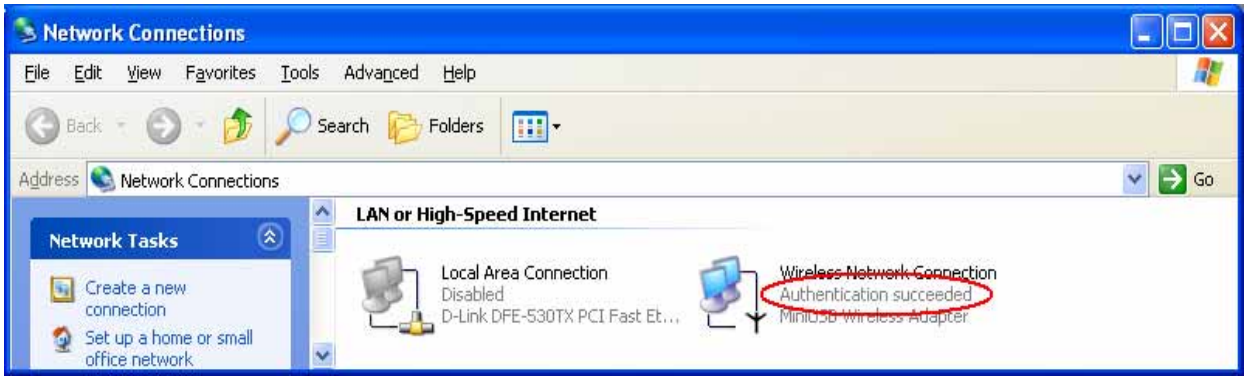

Figure 6: Authentication success

4.2 DUT authenticate PC2 using PEAP-TLS.

1. PC2 choose the SSID of DUT as the Access Point.
2. Set authentication type of wireless client and RADIUS server both to PEAP_TLS.
3. Disable the wireless connection and enable again.
4. The DUT will send the user's certificate to the RADIUS server, and then send the message of authentication result to PC2.
5. Windows XP will prompt that the authentication process is success or fail and end the authentication procedure.
6. Terminate the test steps when PC2 get dynamic IP and PING remote host successfully.

Support Type: The router supports the types of 802.1x Authentication: PEAP-CHAPv2 and PEAP-TLS.

Note.

1. PC1 is on Windows XP platform without Service Pack 1.
2. PC2 is on Windows XP platform with Service Pack 1a.
3. PEAP is supported on Windows XP with Service Pack 1 only.
4. Windows XP with Service Pack 1 allows 802.1x authentication only when the data encryption function is enabled.

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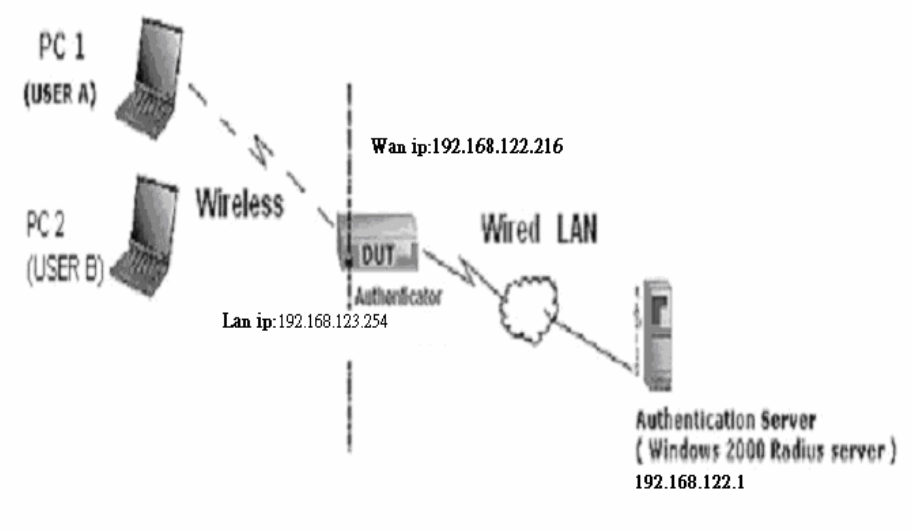
Appendix C WPA-PSK and WPA



Wireless Router: LAN IP: 192.168.123.254

WAN IP: 192.168.122.216

Radius Server: 192.168.122.1

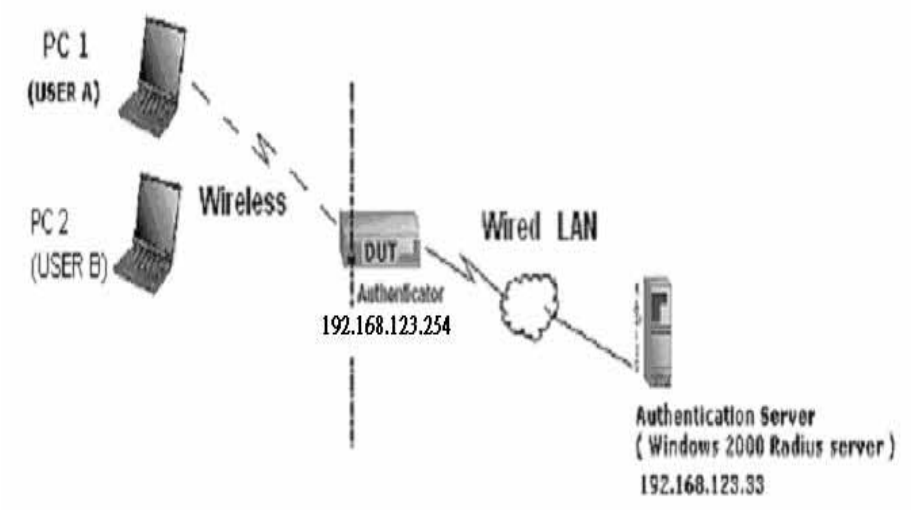
UserA : XP Wireless Card:Ti-11g

Tool: Odyssey Client Manager

Refer to: www.funk.com

Download: http://www.funk.com/News&Events/ody_c_wpa_preview_pn.asp

Or Another Configuration:



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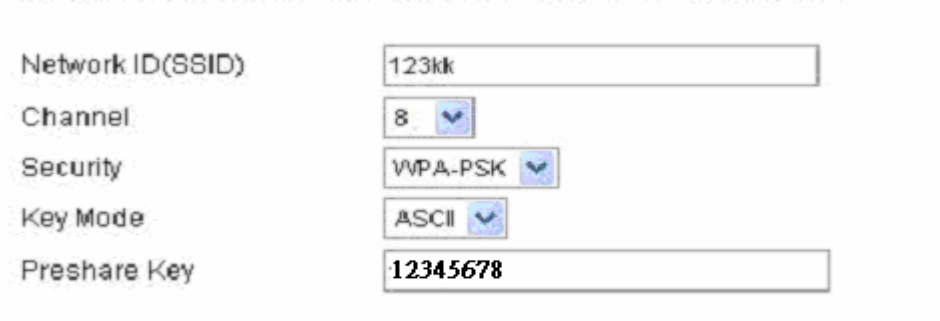
WPA-PSK

In fact, it is not necessary for this function to authenticate using a Radius Server, the client and wireless Router authenticate between themselves.

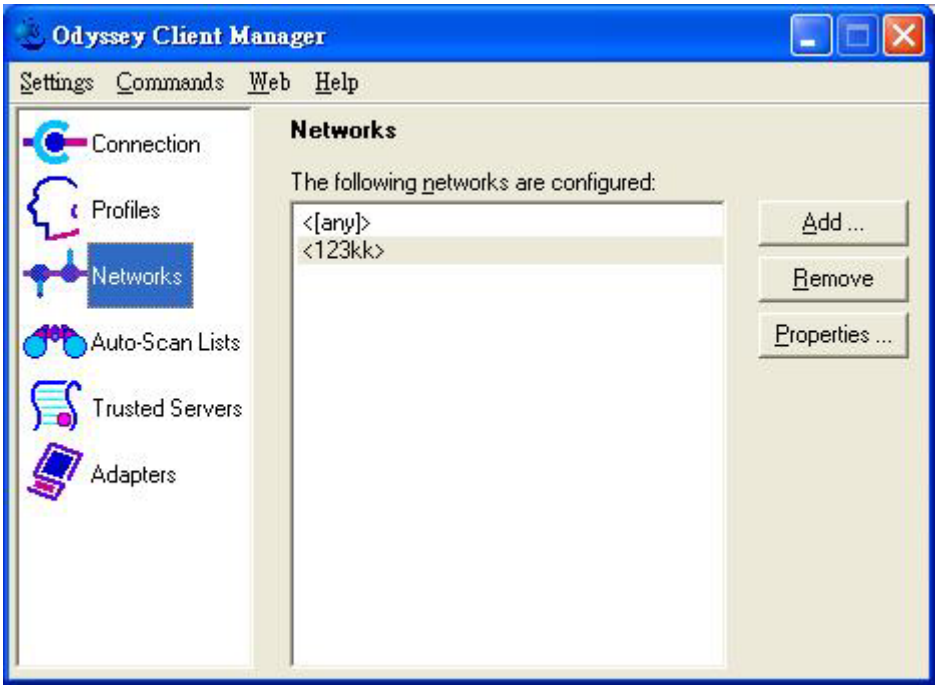
Method1 (where you don't have Windows XP with WPA-PSK support)

1. Go to the Web manager of Wireless Router to do the configuration, like below:



2. Download and install the Odyssey Client Manager software. Go to the Odyssey Client Manager software; first choose "Network" Before doing that, you should verify if the software can show the wireless card.

Open "Adapters"



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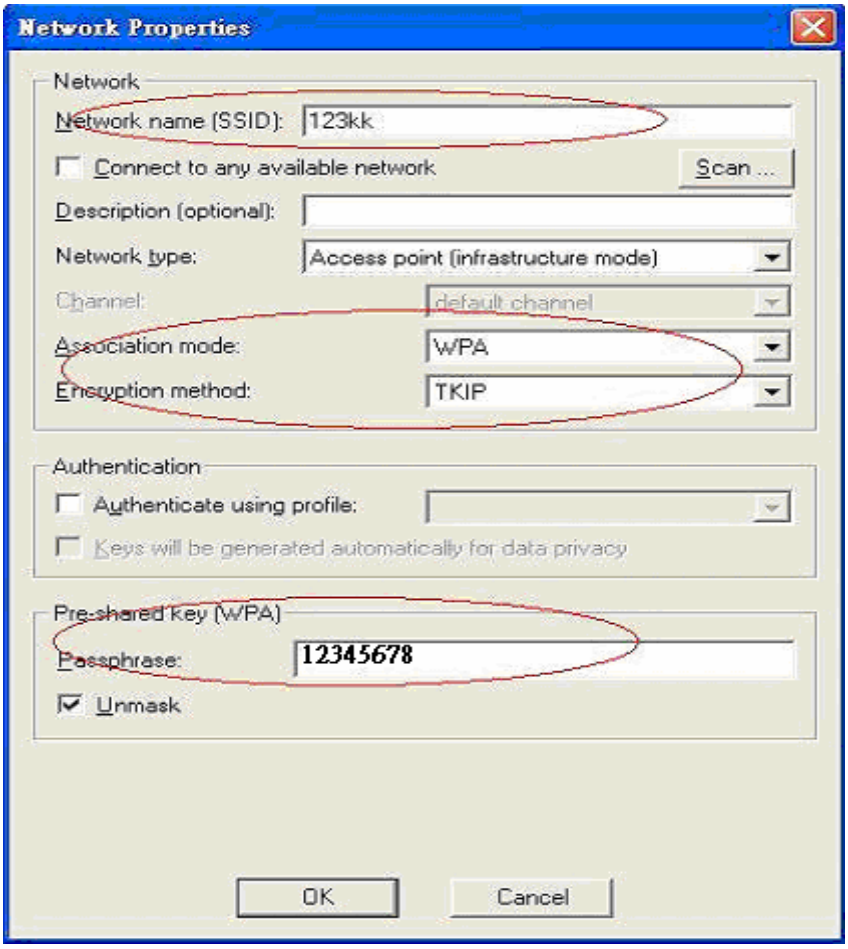
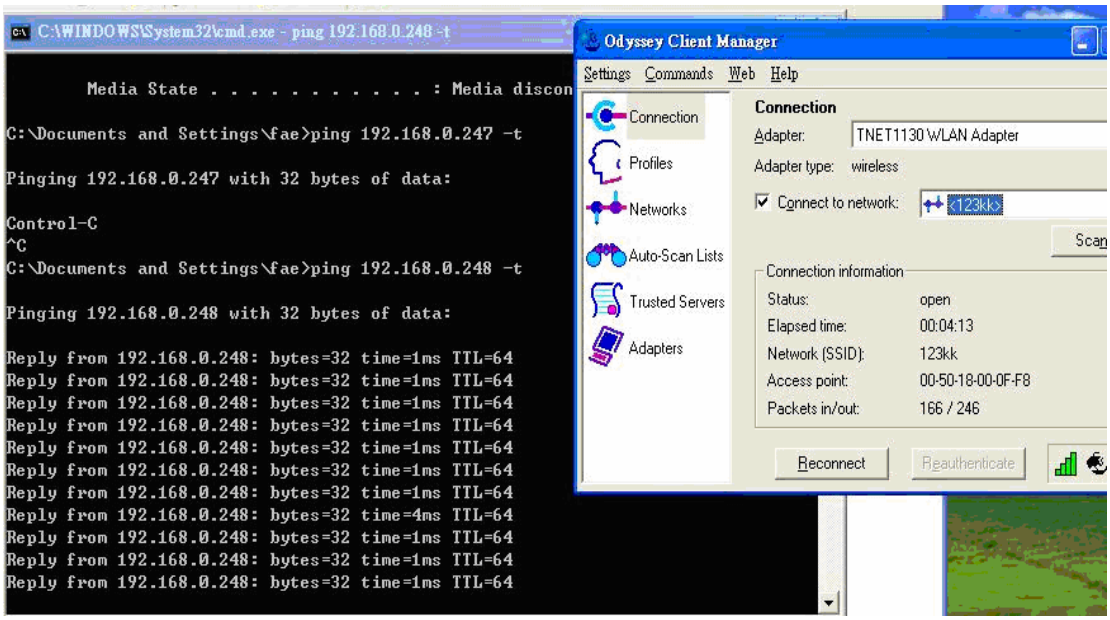
3. Add and edit some settings:



4. Back to Connection:

Then Select “Connect to network” You will see:



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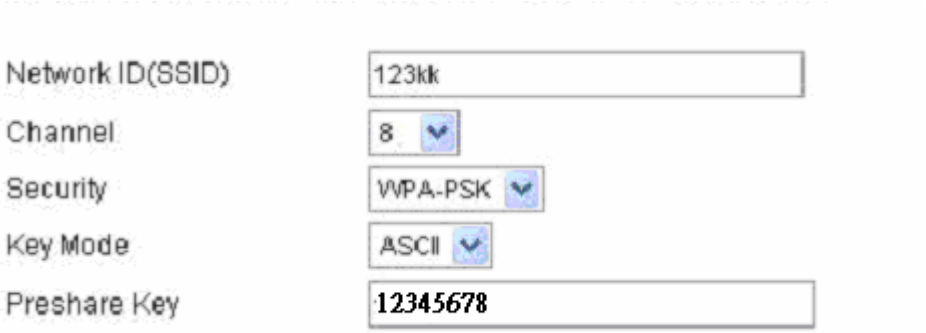
Method2: (using Windows XP with WPA-PSK support)

1. First install XP Service Pack 1 and the patch found at: http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=5039ef4a-61e0-4c44-94f0-c25c9de0ace9. Or just install XP Service Pack 2.
2. Then reboot.
3. Setting on the router and client:

   Router:

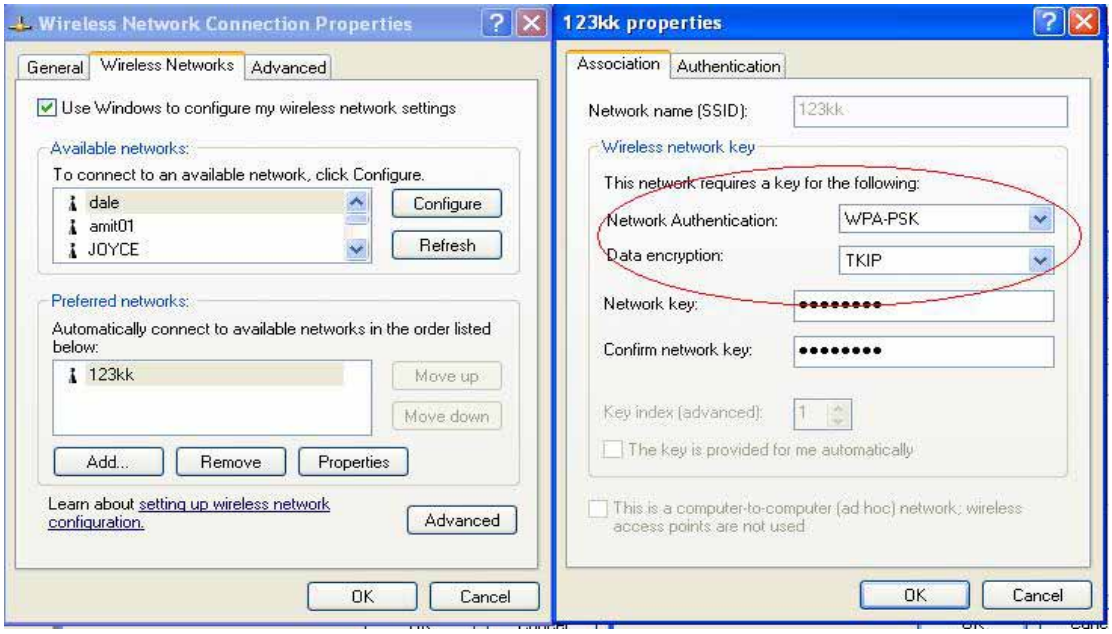


   Client:

   Go to “Network Connection” and select the wireless adapter.

   Choose “View available Wireless Networks” like below:

   Advanced→ choose “123kk” (your ESSID)



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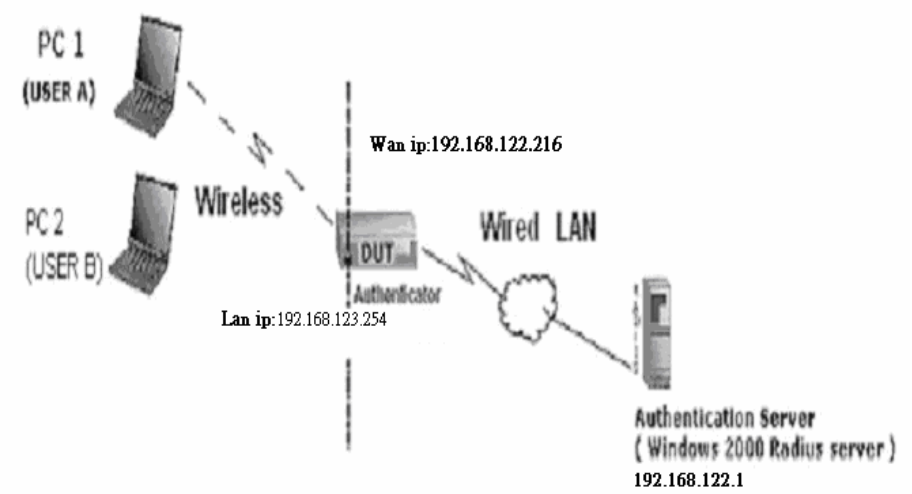
WPA:

For this function, we need a server to authenticate. This function is like 802.1x.



The above is our environment:

Method 1: (where you don't have Windows XP with WPA support)

1. The UserA or UserB have to get a certificate from Radius, first.

http://192.168.122.1/certsrv

2. Then, Install this certificate and finish.

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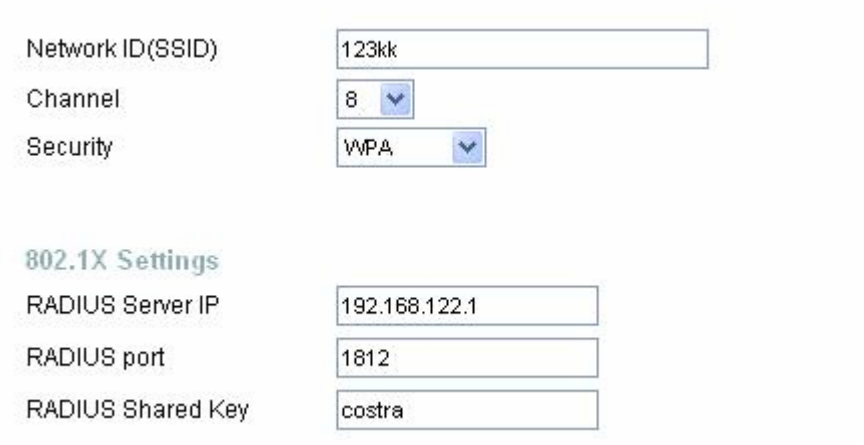
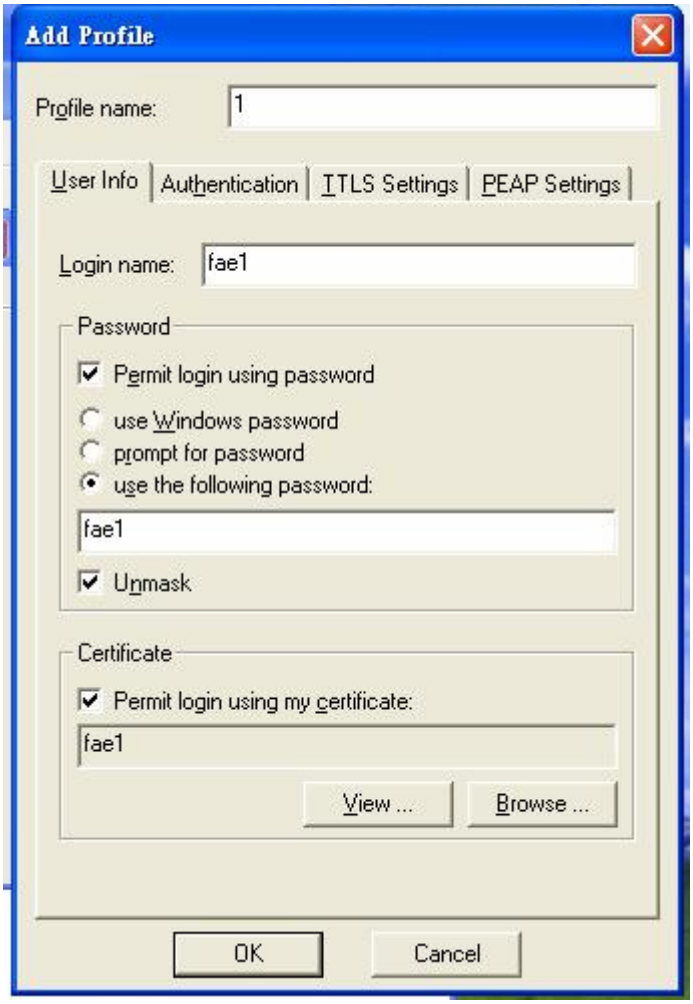
3. Go to the Web manager of Wireless Router to configure, like below:



4. Download and install the Odyssey Client Manager software. Go to the Odyssey Client Manager, choose “Profiles” and Setup Profile name as “1”



Set the username and password as required.

Remember that you get the certificate from Radius in Step1.

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5. Then choose the “certificate” like above.

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6. Then go to Authentication and first Remove EAP/ TLS and Add EAP/TLS again.

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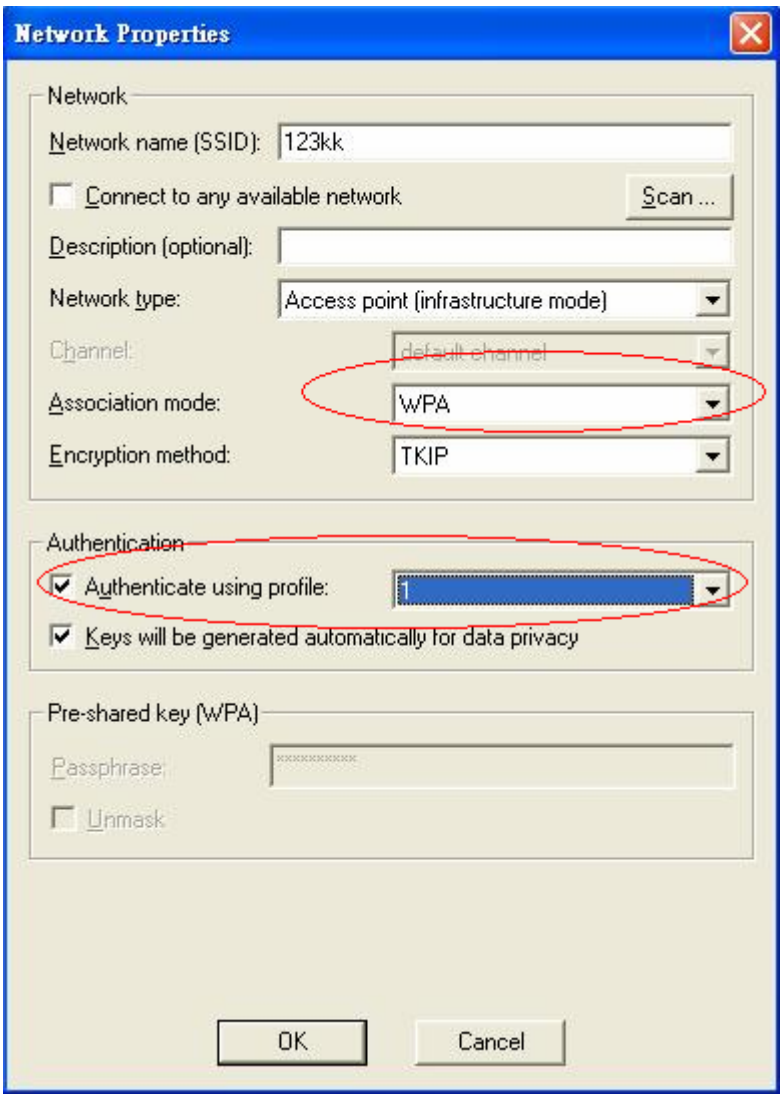
7. Go “Network” and Select “1” and ok



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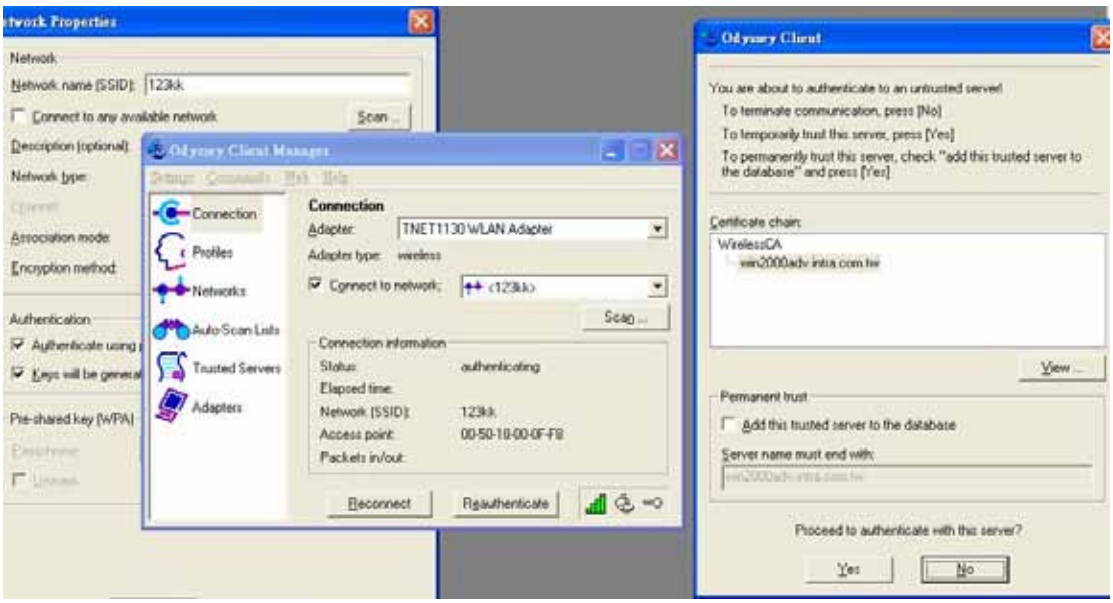
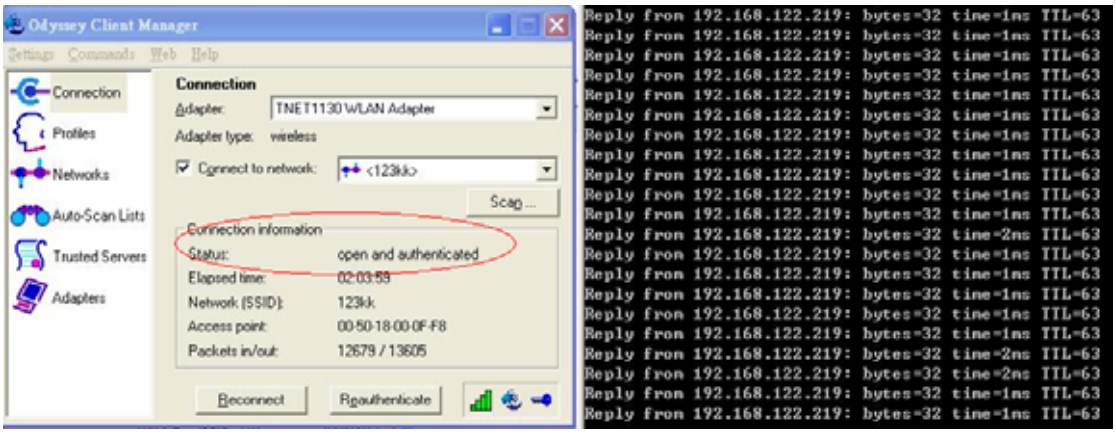
8. Back to Connection and Select your ESSID.

If **successfull**, the wireless client has to authenticate with Radius Server, like below:



9.Result:



Method 2: (using Windows XP with WPA support)

1. The UserA or UserB have to get a certificate from Radius first.

http://192.168.122.1/certsrv

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2. Then Install this certificate and finish.

3. Setting on the router and client:

Router:

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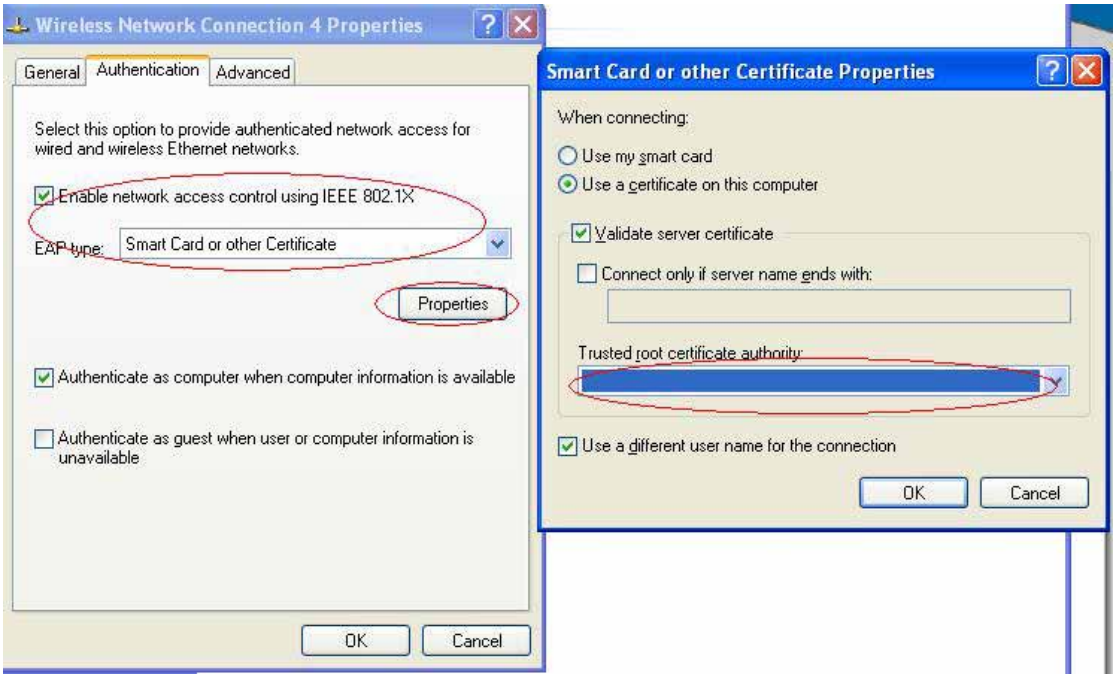
Client:

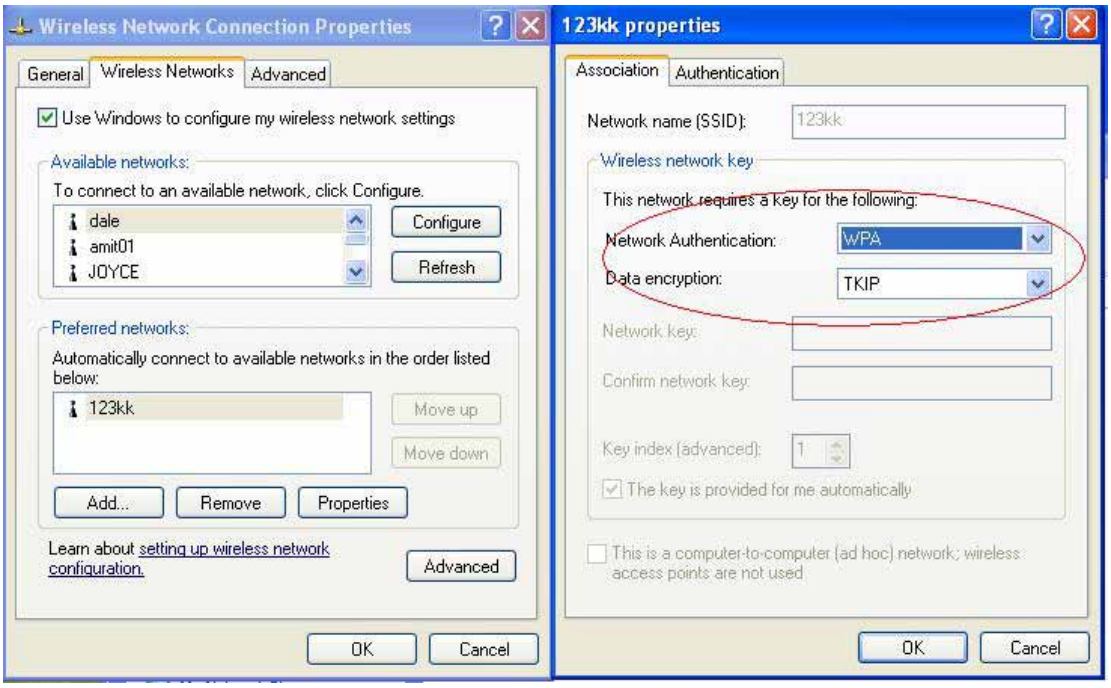
Go to “Network Connection” and select your wireless adapter.

Choose “View available Wireless Networks” like below:

Advanced→ choose “123kk”

Select “WirelessCA and Enable” in Trusted root certificate authority:


Wireless Network Connection 4 Properties
General
Authentication
Advanced
Select this option to provide authenticated network access for wired and wireless Ethernet networks.
Enable network access control using IEEE 802.1X
EAP type:
Smart Card or other Certificate
Properties
Authenticate as computer when computer information is available
Authenticate as guest when user or computer information is unavailable
OK
Cancel
Smart Card or other Certificate Properties
When connecting:
Use my smart card
Use a certificate on this computer
Validate server certificate
Connect only if server name ends with:
Trusted root certificate authority:
Use a different user name for the connection
OK
Cancel



Then, if the wireless client wants to associate, it has to request to authenticate.

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Appendix D FAQ and Troubleshooting

Reset to factory default settings

There are 2 methods to reset to factory defaults.

1. **Restore with the RESET button**

   First, turn off the router and press the RESET button in. And then, power on the router and push the RESET button down until the M1 and or M2 LED (or Status LED) start flashing, then remove the finger. If LED flashes about 8 times, the RESTORE process is completed. However, if LED flashes 2 times, repeat.

2. **Restore directly when the router power on**

   First, push the RESET button about 5 seconds (M1 will start flashing about 5 times), remove the finger. The RESTORE process is completed.

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